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ABSTRACT

An effective and scientifically-based teaching methodology for use in higher education is proposed. Clinical theory and clinical practice are applied directly into the sphere of higher educational theory and methodology. Findings from the field of clinical psychology have been translated into appropriate and specific methodologies in the field of higher education. This is based partly on the rationale that education, especially higher education, in order to be effective, must result in self-revelation, understanding, and personality growth. These same gaols, self-revelations, understandings, and positive personality growth also constitute the mandate of the clinical psychologist working in a clinical or therapeutic setting. (Author/LBH)

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HIGHER EDUCATION: THE CLINICAL PSYCHOLOGIST'S CONTRIBUTIONS

Manny Sternlicht, Ph.D.

Yeshiva University
New York City

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Overview

On all too many occasions, when viewing the various professional disciplines and the associated research behind the development of theory and practice within each of them, the same salient point of criticism is heard. Strides and advancement of knowledge are made in each area which would be beneficial and useful were they to be shared by those performing research in other fields; however, due to a variety of factors, information is not shared on an interdisciplinary basis. As such, with the exception of major breakthroughs, knowledge that is pertinent to theoretical development and practical application for more than one discipline is too frequently overlooked by all but those directly involved in the field in which the discovery has been made, because there is no systematic means for promulgating information to all of those who would benefit from it.

One can even examine this phenomenon in an intradisciplinary regard and find that in some broad fields, such as psychology, advancements in one area often go generally unnoticed in others. As an example of this, findings in an area such as experimental psychology, often published in the Journal of the Experimental Analysis of Behavior, might very well not be disseminated to the clinician who might be able to make practical use of it because he does not review that particular journal.

Perhaps the major reason that this lack of sharing occurs is rooted in the fact that as professionals we are all too willing to find our academic niche and satisfy ourselves with trying to keep up with advancements within our selected sphere. Indeed, dependent upon the popularity of our chosen field, keeping up with current developments can consume a great deal of time. Thus, without attempting to relate pertinent information from one field to another the general advancement of knowledge within a given discipline generally proceeds at a slower pace.

In this regard one can examine the role of the clinical psychologist in the milieu of higher education and find that he is capable of contributing a great deal more than he does at present.

As I have previously stated, in order to be maximally effective the higher education process must result in the learner being able to "expose himself to the professor and to his classmates, so that he may be helped to most fully realize his own potential. When this self-understanding occurs, positive personality growth is the result" (Sternlicht, 1965a). I have further stated that "...self-expression is the surest path to self-awareness. Without this latter, change is impossible and education an empty and useless ritual. Learning must result in total individual growth and development, and not just in

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AUTHOR(S): Manny Sternlicht, Ph.D.

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Title or Position: Professor of Psychology,

Organization: Yeshiva University

Organization Address: 500 West 85th Street,
New York, New York Zip 10033

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Abstract

This manuscript is designed to provide an effective and scientifically-based teaching methodology for use in higher education. It does so by applying clinical theory and clinical practice directly into the sphere of higher educational theory and methodology. That is, the findings from the field of clinical psychology have been translated into appropriate and specific methodologies in the field of higher education. This is based partly on the rationale that education, especially higher education, in order to be effective, must result in self-revelation, understanding, and personality growth. These same goals, self-revelation, understanding, and positive personality growth, also constitute the mandate of the clinical psychologist working in a clinical (therapeutic)setting.

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isolated 'intellectual' achievement." (Sternlicht, 1965b)

Supportive evidence for this premise can be found among various investigators. In an article by Bower (1954), the author states that "Self-understanding plays an important part in understanding and helping others. Yet little has been done to develop leadership and techniques to acquaint teachers with this area (beyond academic courses). Learning about one's self is a delicate problem. But educators, who are the *significant* others (next to parents) in the lives of children, are increasingly aware of the importance of the psychological aspects of their work and strive to deepen their self-understanding". (p.419) Bower has called for a systematic program of teacher education which would combine courses in mental health, seminars in individual and group psychology, and inservice mental health workshops, using techniques from dynamic psychiatry, social psychology, education, and other disciplines as a means of increasing teachers' understanding of themselves and their students in the attempt to heighten teaching effectiveness.

The importance of self-understanding in the educational process also has been highlighted by Jersild (1955), who has stated that "...much of what is called thinking is actually governed by undisclosed feelings. Logic is often ruled by desire; intellectual arguments are often the instruments of fear or anger. To the extent that this is true, the full meaning of what seems to be an intellectual discourse is not revealed or shared. To think straight, to communicate what we are thinking, and to think effectively about what someone else is trying to communicate, it is important to know how we feel, and how feeling influences our thoughts and the thoughts of others. It is necessary to take account of emotional factors in thinking if the intellect is to be given a chance to function freely."

Still others, such as Soffen (1968), have investigated the use of techniques of improving self-knowledge and self-acceptance as a means of improving teacher effectiveness. Soffen feels that if the self-concept of teachers could be improved, coupled with an acceptance and understanding of their limitations, the effect would be one of facilitating the affective learning of their students. Interestingly enough, and not entirely coincidental, these same aforementioned goals of self-revelation and understanding accompanied by positive personality growth also represent the mandate of the clinical psychologist working in the therapeutic setting and, indeed, the entire psychotherapeutic process is dependent upon them.

Unfortunately, however, much of the clinician's knowledge that can be effectively applied to the higher education milieu to facilitate self-understanding and its concomitant personality growth in students at the undergraduate and graduate levels of study is not so applied due, at least in part, to the previously stated lack of sharing of knowledge and techniques between fields, in this case between the clinicians and the college professors.

Previous researchers such as Benincasa (1964) and Symonds (1959) have discussed some of the possible increments to be gained through the application of psychological theories and techniques to the higher educational process. Nevertheless, there are numerous stumbling blocks impeding said application. For one, as stated by Hilgard and Bower (1975), the educator seeking advice from the psychologist (such as the learning theorist) often comes away disappointed owing to the fact that practical outcome is rarely central in the development of theory; thus, rather than receiving a set of "do's" and "don'ts" the academician is likely to receive information that requires interpretation and adaptation before it can be applied in the classroom or lecture hall.

Another indication of the lack of integration of knowledge into the higher educational process is discussed by Eurich (1964), who declares that "...college teaching stands out as one of the few fields in which innovation and improvement are neglected. To be sure, during the past decade colleges and universities have conducted a number of experiments and demonstrations designed to improve teaching. But the number of faculty members affected by them is practically imperceptible in the aggregate... in many cases, even after the demonstrations proved successful, the institution returned to its traditional teaching procedures." (p.49)

Thus it is easy to appreciate that there is much practical and theoretical knowledge in the offing from the psychologist to the educator but which, for one reason or another, the large majority of these resources remain essentially untapped.

Prior to launching into the central discussion of contributions yet to be made, it would be appropriate to review the more usual activities in which the clinical psychologist engages in the world of Academe. These activities can be subsumed under the three broad rubrics of counseling and guidance, testing and evaluation, and institutional research.

In the first sphere, the clinician's role most resembles that of the clinical psychologist, in providing direct psychotherapeutic services and in making referrals to appropriate outside agencies. In the area of testing and evaluation, the clinician might be called upon to help formulate requirements for entry into the college or university, while the duties of institutional researcher may incorporate the devisement of a means of securing answers to various questions that the administration and faculty may wish to know regarding their student population.

In these capacities the clinician is more or less acting as his own man in devising and implementing his own courses of action. They require a rather specific educational and experiential background and there is little that can be proffered to others in the academic world in these regards that can facilitate the teaching process. Surely with the clinician's knowledge of human behavior and interaction, there must be a great deal of knowledge that he can offer to the educator towards a more effective and better balanced means of teaching and evaluation of student progress within a given course of study. It is with these contributions that a majority of the material to follow will be concerned in the attempt to improve teaching methods while maximizing student learning and growth.

In order to facilitate this discussion we might begin by briefly describing the fields of educational and clinical psychology in the attempt to further convey the rationale of the Sternlicht position.

There is still some vagueness as to exactly what constitutes educational psychology. To avoid having the reader formulate the erroneous conclusion that many of the proposals to be outlined in the ensuing discussions are incorporated into the field of educational psychology, we can point out at the onset that researchers, such as Carroll (1963), Gage (1965) and Wittrock (1967), agree that it is not the application of psychological principles to teaching and learning in the classroom. This is not to say that educational psychology does not draw on the knowledge and experience found in other areas of psychology; however, experts in the field go beyond this sole process in their attempts to quantify and improve the learning experience. As stated by Wittrock (1967), "Educational psychology goes beyond the archaic conceptualization that it is 'the application of psychological principles to education.' It is time for us to practice a liberal conceptualization of educational settings. As scientists, we should attempt to describe, understand, predict, and control behavior in education. That is, educational psychology should invest most of its resources into its most important activity - basic research aimed at control and understanding of the problems and phenomena of instruction in schools. Research explicitly aimed at the production of useful knowledge is an activity defensible in its own right, with its own important products - functional relations, generalizations, and theories." (p.19)

A majority of research in educational psychology is presently devoted to "learning about learning," including the effect of teacher characteristics upon learning, structuring tasks to facilitate learning, characteristics of learners, motivation, retention, and transfer of learning, etc., with some, but according to many, not enough emphasis on the role of the teacher and the teaching process. As Gage (1965) has stated, "None of the books in educational psychology, so far as I know, has yet drawn heavily enough on the vast practical literature to be found in the journals and books that deal with teaching methods in our colleges for teacher education. The teaching methodologists have accumulated a storehouse of practical wisdom and lore on how to teach...So far as I know, educational psychologists have not yet fed upon this storehouse."

With the preceding in mind, it can be stated that the discussions to be presented in this work will concentrate for the most part on the teacher and teaching methodologies, in the attempt to fill in the vast gap in educational psychology as reported by Gage. Nevertheless, for the purposes of categorization we will say that the premises and proposals to be outlined will fall under the category of educational psychology, with the goal being to improve the effectiveness of teaching and to facilitate learning as a direct result of their being put forth.

Turning now to the area of clinical psychology, a succinct definition of this field might state that it is a form of applied psychology which attempts to define the behavioral capacities and characteristics of an individual through means of analysis, measurement, and observation. Through the integration of these findings, in addition to data obtained from physical examinations and social histories, the clinical psychologist either actively participates in a program to improve adjustment, such as psychotherapy, or gives suggestions or recommendations as to how it can be facilitated.

Using a broad definition of this type, it is not difficult to see the overlap between the areas of educational and clinical psychology. Both fall under the realm of applied psychology and both entail observation, measurement, and analysis in a more or less systematic fashion. Equally as important, both require the translation of observations and measurements into practical application, although the educational psychologist is less likely to be a direct practitioner of these means than is the clinical psychologist. Furthermore, insofar as learning constitutes so large a proportion of general behavior, it can be said that many of those behaviors which are of concern to the clinical psychologist are equally as important in the field of educational psychology. As is so aptly stated by Carroll (1963), "...it can be claimed that the concept which unifies all psychology, and which is of central concern, is learning. Obviously, learning is the concern of education." Nevertheless, the educational psychologist confines his study to that learning which takes place in the classroom, whereas the clinical psychologist is concerned with all aspects of the individual's daily existence, of which classroom learning is a relevant concern.

Yet another similarity between these two fields can be found in the means of investigation from which practical applications can be derived. Unlike the experimentalist, who is able to test the effect of different variables under the same relative conditions, neither the clinical nor the educational psychologist is so fortunate. While both are free to examine the results of previous investigators in the attempt to maximize the effectiveness of their programs, each is still bound by the fact that, in working with individuals, exact conditions are most difficult (if not impossible) to replicate. As such, it is often difficult to apply variant methods to either different groups of individuals or to the same group of persons at another time and gauge the true effectiveness of each. Furthermore, the determination of the effectiveness of a method often relies upon a subjective analysis as to what is positive. For example, a teaching method that facilitates rapid learning of facts but does not ingrain them in a manner which facilitates long-term recall might be judged effective by some and ineffective by others. The same can be said of some results obtained during the clinical treatment of an inappropriate behavior. The clinical psychologist may help to eliminate an undesirable behavior in such a way that the end result is considered successful by some and unsuccessful by others. Thus, it can be seen that in both fields research methods designed to determine the effectiveness of one treatment or teaching method over another too often produce equivocable results.

In light of these similarities of objectives and problems, compounded by varying opinion as to the limits of educational psychology per se, one would expect that there is much to be learned from the clinical psychologist that would be of benefit to the academician. Why then, is the clinician in the educational milieu restricted to the duties of counseling and guidance, testing and evaluation, and institutional research, and not actively part of the entire academic process?

One possible set of causes for this lack of involvement has been alluded to by Jones (1968), who states that "...the respect of teachers for clinicians is usually superimposed upon a fundamental mistrust. A variety of causes are at work here: differences in status, disparities of income, outright snobbishness, and so on. The primary cause, however, is the clinician's characteristic lack of involvement in the teacher's realm of expertise, the educative process. For a clinician to exercise his skills, the pupil must be converted into a patient, however temporarily. He or his parents must be prepared to view certain behavior or certain attitudes as sick, whatever the euphemisms used against stigmata. Otherwise it might not be seen as appropriate to consult a doctor. Some teachers, recognizing the values of the clinician's objectives, and impressed by the delicacies of his skills, become practiced at lending a hand in this conversion process.

But clinicians in schools are part-time help; they treat and leave. There is almost never occasion for professional exchange, for the teacher to enlist the help of the clinician in the instructional process, which to any honest observer would be as recognizably valuable and as impressive in the delicacies of skill required." (pp. 6-7)

As was pointed out at the onset, this process of categorizing different professional areas into niches and not sharing information and techniques might be convenient for some, but it is certainly not in the best interests of the advancement of knowledge. The feeling that the clinical psychologist is solely the treater of the "sick" is a counter-productive by-product of this type of thinking. Jones (1968) also states that because the clinical psychologist devotes only part of his time to the world of Academe, there is little opportunity for professional contact between himself and the educator. Full-time participation is not prerequisite to any such contacts. We seldom find ourselves with enough time to pursue each and every objective in which we would like to become involved, but we instead try to organize our time so that a fair share of attention is given to those affairs where there is something to be gained. This can be said of the clinical psychologist in the academic environment. While it might be true that infrequent consultation between the educator and the clinical psychologist is not as substantial as full-time involvement, can we not say that this still is preferable to no such involvement at all? The answer to this question is obviously yes. If there is a void in the educational system that can be filled by the clinical psychologist, then the attempt to do so should be made regardless of the "proportion of time" that the clinician is free to devote to such an attempt.

While we are primarily concerned with the contributions of the clinical psychologist to the higher educational process, we will not limit our discussions to teaching on the undergraduate or graduate level alone. This would be representative of the same counterproductive categorization process previously alluded to. Instead, while a majority of the information to be presented will be concerned with the educational process at these strata, it must be realized that effective teaching methods are often applicable for use at all educational levels. Insofar as there are different problems incurred in the teaching of first graders then in educating undergraduate or graduate students, some of these discussions will not be relevant to the former; however, many of the premises to be presented will be, and as such can be, of benefit to the elementary school teacher as well as the university professor so long as the following facts are kept in mind.

Firstly, there are obvious differences in the level of maturity and the degree of educational experience between the college student and those at lower rungs on the educational ladder. We can expect that, as a function of greater exposure to the demands of the educational milieu, students who have reached the college level will have formed certain learning habits, such as a study routine, note-taking method, examination-taking technique, etc., that have facilitated their advancement to a higher academic level. This is not to say that there is a uniformity or homogeneity of performance level for such students and that all individuals at this hierarchy will be equally versed in learning capability. There are vast differences among students' intellect, motivation, receptivity, and other factors. Nevertheless, it can be expected that students who have persevered to qualify for college entrance will have attained a certain level of learning capability and performance. On the primary and secondary level of education this cannot be assumed.

Another factor that differentiates higher education from those levels of academia that are below is the amount of independence usually fostered in the former setting. At lower educational levels assignments are usually very specific and the student is afforded less latitude in his choice of topic and mode of organization than is the college or university student. Since learning dynamics are affected by the degree of independence given to the student, one can expect that this would contribute to the differences between educational levels.

Still another contributing factor to the difference between primary and secondary education and that at the college or university level is the type of interaction between the teacher or professor and the student. At the lower levels, the role of the teacher is usually more dominant and authoritarian than is that of the college or university professor. Part of this has to do with the fact that at earlier educational levels the teacher must concern himself with the formation of, or elimination of, certain behaviors which can affect the individual or the entire class. At the undergraduate or graduate level, however, as a function of certain motivational factors and increased special maturity, the professor is free of the constraints of behavior control and can more readily concentrate on academic teaching.

The effects of different types of student-teacher interaction were investigated by Hedegard (1968); however, no significant results could be obtained, possibly due to the fact that the sample size was too small, in addition to the fact that certain analyses were especially vulnerable to missing or incomplete data.

Another difference found between different levels of the educational hierarchy is that, at the primary level, all subjects are taught by one teacher, whereas at higher educational levels course work becomes more specialized and a different professor usually teaches each separate course. This single instructor versus multi-instructor method of education is likely to affect learning, as has been shown in an experiment by Dupuis (1966) in which it was found that student achievement can be heightened using the latter mode of instruction.

Specialization of course work itself might be pointed out as a further differentiating factor between educational levels. Learning dynamics are likely to differ as a student begins to delve deeply into a specific academic area, as opposed to the student at lower educational levels who divides his study time between a variety of different subjects in differing academic endeavors.

A final differentiating factor might be said to lie in the classroom milieu itself. At lower educational levels, classes are composed of students with varying intellects and interests. At the college or university level, classes are composed of individuals who are generally higher in intellect than the average student at lower rungs on the educational ladder. Additionally, as students become more specialized in their undergraduate and graduate study, classes become more homogeneous. This is accompanied by a difference in the teaching approach, types of assignments given, and style of tesing used to appraise achievement.

These various factors highlight the fact that higher education differs significantly from education on the primary or secondary level. Nevertheless, as was previously stated, many of the discussions to follow will pertain to all levels of education despite the fact that the prime focus will be on that of the college or university level. Keeping these aforementioned differences between academic levels in mind, the reader should be able to make the determination as to which discussions are applicable to various educational levels, as opposed to those which solely apply to the higher educational milieu.

Prior to launching into a direct discussion of the contributions of the clinical psychologist to the educational process, it might be appropriate to discuss some of the more prominent thinking on learning, including behavioral and clinical approaches.

One of the foremost advocates of the behavioral approach to education is Hilgard (Hilgard & Bower, 1975). As a fundamental basis for his theory, applicable to the study of other learning theorists, Hilgard and Bower have proposed a list of some fundamental questions that can be used to appraise various learning theories. The questions outlined are as follows: "1. What are the limits of learning?- Here is raised the question of the capacity to learn, of individual differences among learners of the same species and of unlike species. There are questions not only of persistent differences in capacity, but of change in capacity with age. Who can learn what? Are the limits set at birth? Do people get more or less alike with practice? These are the sorts of questions it is natural to raise.

2. What is the role of practice in learning? The old adage that practice makes perfect has considerable historical wisdom behind it. Surely one learns to roller skate or to play the piano only by engaging in the activity. But what do we know about practice in detail? Does improvement depend directly on the amount of repetition? If not, what are its conditions? What are the most favorable circumstances of practice? Can repetitive drill be harmful as well as helpful to the learner?

3. How important are drives and incentives, rewards and punishments? Everybody knows in a general way that learning can be controlled by rewards and punishments, and that it is easier to learn something which is interesting than something which is dull. But are the consequences of rewards and punishments equal and opposite? Is there a difference between intrinsic and extrinsic motives in their effect upon learning? How do goals and purposes affect the process?

4. What is the place of understanding and insight? Some things are learned more readily if we know what we are **about**. We are better off as travelers if we can understand a timetable or road map. We are helpless with differential equations unless we understand the symbols and the rules for their manipulation. But we can form vowels satisfactorily without knowing how we place our tongues, and we can read without being aware of our eye movements. Some things we appear to acquire blindly and automatically; some things we struggle hard to understand and can finally master only as we do understand them. Is learning in the one case different from what it is in the other?

5. Does learning one thing help you learn something else? This is the problem of formal discipline, as it used to be called, or of transfer of training, to use a more familiar contemporary designation. Some transfer of training must occur or there would be no use in developing a foundation for later learning. Nobody denies that it is easier to build a vocabulary in a language after you have a start in it, or that higher mathematics profits from mastery of basic concepts. The question is really one of how much transfer takes place, under what conditions, and what its nature is.

6. What happens when we remember and when we forget? The ordinary facts of memory are mysterious enough, but in addition to familiar remembering and forgetting, our memories may play peculiar tricks on us. Some things we wish to remember are forgotten; some things we would be willing to forget continue to plague us. In cases of amnesia there are often gaps in memory, with earlier and later events remembered. Then there are distortions of memory, in which we remember what did not happen, as is so strikingly demonstrated in testimony experiments. What is taking place? What control have we over processes involved? " (pp.22-23)

Hilgard and Bower go on to state that the preceding questions illustrate the kind of problems which give rise to learning theory. Hilgard also has attempted to present some answers to these questions which he feels should be acceptable to most learning theorists. Briefly summarized, these 14 points are as follows:

1. Brighter individuals are usually capable of learning things that individuals with lesser intellectual endowment cannot learn. Generally, older children can learn more readily than younger ones; the decline of learning ability often evidenced with increasing adult age is dependent upon the type of task or concept that is being learned.
2. Generally, heightened motivation facilitates learning. This includes general motivation (such as achievement needs or desire to learn) and more specific motivation (such as avoiding punishment or receiving a reward for efforts).
3. Motivation that is too intense (i.e., pain, fear, anxiety, etc.) can lead to such distracting emotional states that achievement is less than that found accompanying lower motivational levels.
4. Learning accompanied by positive reinforcement is generally preferable to that which occurs under the threat of punishment. Similarly, learning motivated by success is preferable to that which is motivated by failure.
5. Learning through intrinsic motivation is preferable to learning under extrinsic motivation.
6. Tolerance for failure is best taught when there is a backlog of success to compensate for instances of failure.
7. Individuals should set realistic goals for themselves which are neither so high that they cannot be met nor so low that they fail to elicit a proper amount of effort.
8. Differences in individuals' personal histories can serve to hamper or enhance the ability to learn from a given instructor.
9. Active participation in learning is preferable to passive reception.
10. Meaningful tasks and materials are easier to learn than nonsense materials and are more easily understood by the learner.
11. Repetitive practice facilitates learning of skills (i.e., playing the piano or bowling) and memorization of unrelated facts which must be automatized.
12. Feedback as to the quality of performance, knowledge of errors, etc. facilitate learning.
13. Transfer of learning from one task to another is better accomplished if he has applied learned principles to a variety of tasks during the learning experience.
14. Spaced or distributed recalls are more successful in fixing learned tasks that are to be retained for a long period of time.

Rather than attempt to review behavioral psychology per se, let us look at how behavioral theory relates to the educational process.

Regarding practice in facilitating learning, the behaviorist would say that as long as repetitive trials are positively reinforced, practice is effective. Similarly, task practice as a means of avoiding punishment is also effective to a degree but results are not as long-term as in the positive reinforcement situation. The accumulation of strength with repeated practice is dependent upon a chain of related operants and a group of discriminated stimuli. (Capacity to learn is not of central importance in a review of behavioral theory insofar as the laws of operant conditioning hold true between organisms of varying capacities.)

In regard to motivation, operant strength is only increased by reinforcement. Reaction to punishment can be diverse, although it usually suppresses response rate. Behavioral theory looks upon intrinsic motivation as essentially meaningless, in light of the theory that behavior comes about as a result of extrinsic reinforcement. Although it is understood that drives can affect the strength of operants, they do little to facilitate the functional analysis of behavior.

Finally, regarding transfer of learning from one task to another, the strict behavioral view is that this is a process by which reinforcement of a response is likely to elicit the same or a similar response in the presence of other complex stimuli containing the same elements.

Much of the preceding theories are a result of the research of Skinner (1938,1968), who is considered by many to have advanced the field of behavioral psychology initiated by prior investigators such as Hull, Thorndike, Watson, and others to its present position in the limelight. As a result, Skinner has been referred to as the most generally recognized psychologist in America today.

As Roberts (1975) has stated, behavioral educational psychology is the most widely used approach to education today and has been adopted as the official orientation of educational psychology in general. According to Roberts, the two main principles that best convey the contributions of behavioral psychology are that people learn what they are reinforced for learning and that one should be clear about what one is doing. This latter point represents the fact that any action is likely to elicit a response; thus, actions should be carefully gauged so as not to elicit those responses that are not in line with our objectives. Further, careful attention must be paid to avoid punishing certain individuals for inappropriate behaviors as the attention shown through the administration of such punishment might be positively reinforcing to them.

The quality of reinforcement also serves to affect learning. In an experiment in school motivation by Page (1958), the author states that personal and encouraging rewards work better than those of a less personal nature. This has been supported by the research of Homme, Csanyi, Gonzales, and Rechs (1971), in an article about resistance and opposition in the use of contingency contracting in the classroom, and by Hall, Panyan, and Braden (1968), in discussing reinforcement procedures which improve classroom control.

Martin (1974) has attempted to measure teacher and student perceptions of reinforcers and contingencies operating in particular classrooms, with the aim of improving the contingency management approach to higher education. Using a questionnaire, Martin determined that, contrary to predictions and existing literature on the subject, teachers' perceptions of contingencies and reinforcers of the classroom are similar to those of a "model" student.

Also applying behavior principles to the field of education, Gagne (1971, 1972) has categorized all learning into five areas: motor skills, verbal information, intellectual skills, cognitive strategies, and attitudes. According to Gagne, if learning is to be effective, then the outcomes of learning must be fully considered by means of statements which identify both the capability to be learned and the class of performances through which that capability is exhibited.

Emphasis can now be shifted to a different educational approach which can be referred to as the clinical or psychotherapeutic approach. While the behavioral approach is rooted in the philosophy of Thorndike, Skinner, and others, the psychotherapeutic approach is, to a large extent, based on many of the theories of Freud. Here again, it would be far beyond the scope of these discussions to attempt to review the entire realm of Freudian psychology prior to discussing its relationship to educational theory. Instead, a brief presentation of the relationship itself can be presented, predicated on the belief that the reader will already have a basic knowledge of psychotherapeutic theories.

Quite opposite from the behaviorist point of view, the psychotherapeutic approach centers around biology and physiology, especially the nervous system as a basis for human behavior. Insofar as much of Freudian psychology is based upon the importance of the experience of childhood, the importance of childhood education is emphasized by those who apply the psychotherapeutic approach to education.

We can relate this approach to some of the concepts that were previously discussed in regard to the behavioral viewpoint, as a means of comparing these two very different schools of thought. In regard to practice, this principle is illustrated by the "working through" aspect of psychotherapy in which conflicts are repeatedly faced as a process of reeducation. Because these conflicts are viewed from different angles through repeated confrontation, learning takes place. Repetition in and of itself is useless unless there is a slightly different outlook with each successive trial. With reference to motivation (a basis of a large proportion of psychoanalytic theory), anxiety and ego threats are thought to be fundamental to an understanding of the learning process. Regarding transfer of learned information to facilitate learning another task, through the process of symbolization and condensation, aspects of earlier and later learning become integrated.

Another educational aspect that is particularly suited to a discussion of psychoanalytic theory is that of forgetting. Since so great a portion of Freudian psychology concerns itself with unconscious motivation, forgetting is viewed as a manifestation of the ego defense mechanism referred to as repression. While it is felt that the most notable repression takes place in childhood, it is a process that nevertheless continues throughout the course of adult life in which new repressions join older ones in the unconscious.

Psychoanalytic theory has served to broaden those areas studied within the general field of learning. As stated by Hilgard and Bower (1975), "...psychoanalytic thinking has helped to erase the boundaries between the neurotic and the normal, so that what was once relegated to 'abnormal psychology' now becomes part of general psychology. Because there is a recognized continuum between the neurotic and the normal, the learning of symptoms becomes continuous with the learning of mannerisms and the acquiring of attitudes....Hence the range of topics that interest students of learning has been extended to include perceptual distortion, repression, and symbolism, all implying personal and idiosyncratic modes of expressing the results of learning." (p.371)

One area of education that is important to teaching effectiveness is the understanding of inexplicable student behaviors which at times may be quite confounding to educators. This is one of those problems that is encountered across all educational levels, although different types of behaviors may be of concern as students progress throughout the educational hierarchy. In this regard, psychoanalytic theory can be particulary useful in facilitating teacher understanding of these behaviors and, as such, helping the educator change or eliminate them or even work around them in order to maximize student learning.

This aforementioned application of psychoanalytic theory is discussed by Grossman (1969). Grossman has used the ego defense mechanism of transference as a means of explaining student behaviors. He states that in the modern American educational structure there is an overlap between the roles of teacher and parent so that for some, especially for young children, there is a propensity to unconsciously come to confuse the two and transfer some of their feelings about their parents to the teacher. According to Grossman, two signs which evidence this transference process are the inappropriateness of, and the excessiveness of, certain student responses. An example of an inappropriate response indicative of transference can be found in the case of the child who claims "You don't really care about me!" upon being refused permission by the teacher to go for a drink of water, even though there is a rational basis for this denial. As Grossman states, "The child's tendency to identify with the teacher on a defensive basis is a function of what he brings to the situation in the form of familial experiences, as well as a function of what the teacher supplies in the form of classroom environment. The teacher serves as an available identification model which in most instances is meant to be emulated. The teacher presumably has acquired skills and attitudes which she expects the child to share. Punishments, threats, and other forms of prohibitions are among the devices available to accomplish the teaching goal." (p.495)

The process of transference has been the subject of research for other investigators with a psychotherapeutic orientation. In discussing psychoanalysis and the future of education, Watson (1957) has compared the student-teacher relationship to that of the patient-therapist relationship in psychotherapy. To quote Watson, "A teacher may be...a direct love object, a strict superego figure, an ego ideal, or an ego-helper. Almost regardless of what the teacher intends to be, each pupil will at first project upon his teacher a role which arises out of the experience of that child with other significant adults. This distorted personal perception (which Sullivan has called "parataxis") inevitably affects the child's reaction to whatever the teacher may be trying to convey. Whether the pupil learns, and what he learns, depend in large measure on a variable factor which pedagogy has blithely taken for granted." (p.243)

Watson makes a point that is central to the discussions to be set forth in this text. He explains that prior to the advent of psychoanalytic practice from dyads to larger groups there was a difficulty in applying psychoanalytic precepts to classroom teaching. The educator who made use of this body of knowledge was usually forced to do so in an out-of-the-classroom setting, usually with students who required help on a one-to-one basis. The introduction of group psychology has added an entirely new dimension to psychoanalytic practices in education. It is not only possible to view student-teacher relationships in this light, but also the relationship of the student or the teacher to the entire class group in evidencing jealousies, suspicions, and aggressive attacks of one individual in the class towards either the teacher or fellow students alike. Key patterns evidenced in classroom relationships can both shed significant light on the individual's personality structure as well as help the teacher gear his approach in a way that will facilitate learning for different members of the class.

Another factor discussed by Watson (1957) is that of the importance of symbols in teaching. He states that "Beneath the superficial, rational, and technological mechanisms of our civilization lie the stirrings of another sort. Biologically grounded, they antecede the patterns of any particular culture." These stirrings have been referred to as the unconscious symbolism of dreams and fantasy. Through recognizing the existence of this buried means of communication, Watson feels that we can augment the effectiveness of teaching and thereby further stimulate learning through nonverbal interaction.

In summing up his viewpoint, Watson cites the research of Kornberg who conceives teaching to be the organization of interpersonal interactions in groups of three or more to convey meanings which meet with the personal needs and purposes of group members. In Kornberg's view, one-to-one tutoring is therapy, and all methods of group treatment fall under the realm of teaching.

There are further influences of psychoanalytic theory that will be discussed. However, they will better fit into some of the specific discussions of the clinical psychologist's contributions to the educational process centering around teaching at the college or university level. One point that should be mentioned at this juncture is that a majority of the literature on the application of psychoanalytic theory to education is centered around the primary or secondary school environment. This is a reflection of the importance of childhood in psychoanalytic theory. We will attempt to carry these applications to the framework of higher education, in the belief that they can be equally important in the study of teacher effectiveness and student receptivity to learning at all educational levels.

Contributions of the Clinical Psychologist to the Educational Process

With the preceding section as an orientation, we can commence to examine some of the previously alluded to contributions that the clinical psychologist can proffer to the college or university professor. To facilitate this discussion, these contributions can be subdivided into five broad interdependent groupings, as follows:

1. In direct teaching methodology.
2. In translating the results of psychological experimentation into educational processes and applications.
3. In evaluating the progress of students.
4. In testing and evaluating new theoretical inferences.
5. In directly applying knowledge of individual, subcultural differences.

As shall be evidenced, these discussions are predicated upon my views of what constitutes an effective teaching posture. I have previously highlighted many analogies between the role of a professor of higher education and that of a chief clinical psychologist (Sternlicht, 1965a). Both can be conceptualized as expert resource guides. By this I mean that in acting in the capacity of consultant, each, if he does not know the answer to a specific problem, will be able to refer the inquirer to an appropriate source or reference which should be of aid to him in finding its solution. There is a key concept being expressed here. The preceding view calls for the professor to aid the student in finding the answer. This conceptual framework perceives the professor as one who encourages his students to become actively involved in assuming major responsibilities for securing knowledge and solving problems, while he (the professor) remains in the background ready to offer guidance and assistance when so requested. In addition, the professor assists in the formulation of particular discussion areas, and in clarifying concepts that his students find difficult to grasp.

In this latter function it is up to the teacher to determine where assistance ends and coddling begins. Again, the idea is to force the student to be as responsible for garnering his own knowledge as is maximally possible. By this it is not meant that the professor is to delineate what facts are to be sought, sending his students out to act as sponges, soaking up available information only to regurgitate it upon demand. True knowledge acquisition requires the learner to look at a topic and to integrate those facts that the learner feels are pertinent to the subject, and then to organize these learned materials into a presentation which shows that he has not only comprehended what he has studied, but which also shows creativity in organization. Like the clinical psychologist, the teacher reviews what is presented to him, comments on it and offers other feedback, and tries to direct the student in a fashion that will facilitate further learning.

In order to be truly effective, teaching methodology must be based upon sound educational and psychological theory. Unlike those who seek to firmly delineate interdisciplinary responsibilities, we will state that there is a great deal of overlap between educational and psychological theory, and surely many of the previously presented discussions substantiate this fact. Indeed, any applicable information that advances the learning and teaching process becomes a part of educational theory and as such, in discussing various contributions of the clinical psychologist, there will be no attempt to categorize information as belonging to one field or another.

At any rate, regarding teaching methodology, true educational progress will only occur if the student is actively involved with the concepts and materials being dealt with. Additionally, learning must result in total individual growth and development, and not merely in isolated "intellectual" achievement.

Let us begin by discussing just what constitutes growth. It might be said that growth entails changing the way we look at the world. Through experiences we come to realize that views that we previously held must be reorganized, if they are to conform to new information acquired as we grow. We often are forced to reintegrate some information, disintegrate previously held concepts, and reorganize our perspective on certain things as a result of life experiences. This statement should be acceptable regardless of professional orientation, be it cognitive, behavioral, or otherwise.

Readjustment of outlook is one means of attaining growth. It can be facilitated through the setting of goals and objectives which stimulate an individual to acquire information that leads to an adjustment in thinking. This change also might come about as a result of boredom, in which an individual is motivated to seek new information as a means of stimulation.

Through the acquisition of information we come to form concepts. Since we are always receiving new information, some of which conflicts with concepts that we have already formed, we can look at concept formation as allowing the mind to take a respite from contemplating our ever changing world, while almost unconsciously integrating new information into our various concepts. When changes in concept are observed, the result can be considered growth. Self-concept, then, can be considered to be a by-product of an individual's behavior and the feedback that is given him by others, and can help an individual plan his future course of behavior.

Growth can come about in a variety of ways, be they voluntary, as through mediation, or involuntary, as in those cases in which growth is an offshoot of the attempt to affect someone or something else. This relates to our initial premise, in which I have stated that to be maximally effective the teaching process should lead to self-revelation for both students and teachers alike. A further discussion of this concept will appear in a later section of this text.

There are many techniques that can be incorporated into the teaching methodology which can foster such growth and development. A few such methods will be briefly mentioned at this time, with a full discussion of each to follow in the section on curriculum and methodology.

One means of increasing growth in teaching through teaching methodology, while at the same time encouraging active student participation, is to briefly discuss an assignment with the class and then leave the room and permit the students to discuss the assignment among themselves, arriving at questions which the text may not have adequately covered. The professor would return either after a fixed interval or upon being requested by his students to do so, and discuss the questions and problems that have arisen during his time away from the class. A modification of this process would be to divide the class into several cooperative groups, with each group of students presenting a cooperative forum discussion on a given topic. Such presentations would be wholly integrated ones, rather than a series of individual presentations. Properly planned and carried out, this procedure will not only result in individual student active participatory academic achievement, but will also result in increased student interaction. This process is in many ways similar to that of "brainstorming," which promotes creativity and will be further discussed in the section relating to the creative process in learning.

Another means of fostering growth through the teaching methodology, heightening student interests, creativities, and educational advancement, is the use of a term project, rather than a term paper, assignment (Sternlicht, 1965b). While this will also be fully discussed in the section on curriculum and methodology, it can be briefly stated that this technique requires the undergraduate or graduate student to construct a visual demonstration model which will most effectively illustrate an abstract verbal principle or principles that are included in the course content. Artistic talents should not be considered in the grading, nor should the quality of the finished product serve as a criterion for judging the effectiveness of a given presentation. Rather, the crucial factor is the visual expression of the concept that is chosen. I feel that the purpose and meaning of an individual's educational experience is more aptly transmitted through such a term project.

Shelving further discussion of teaching methodology to a later section, we can continue to discuss the clinical psychologist's contributions to the educational process in other respects. One such contributions would be in translating experimental results into techniques which can be applied to the educational process. The clinical psychologist, whose background includes extensive study in scientific methodology, is in an enviable position to suggest fruitful applications of more basic psychological experimental results to human behavior. In many ways, this means educational applications, since the goal of education is the modification of behavior.

Examples of this type of contribution are numerous. While it is true that experimentation is used by educational psychologists to test the efficacy of theories, there are countless other experiments that are performed in other areas of psychology that can affect the educational process or which can lead to investigations by educational psychologists that would have a practical effect on the teaching and learning process.

Additionally, many experiments which are performed by educational psychologists have too often concerned themselves with teaching and learning on the elementary school level. As I have previously stated, perhaps the reason that so little attention is given to consideration in the field of higher education in such studies is the erroneous feeling that pupils at this level are felt to be relatively adept in their methods of study and learning, in addition to the fact that the high degree of specialization in courses of study at the college or university level render such experimentation more difficult. At any rate, there is a void in such experimentation that can be filled, at least in part, with some of the knowledge that has been experimentally gained in other areas of psychology. Some specific experiments of this nature will be cited later in the discussion of contributions from the psychological laboratory.

Still another contribution that the clinical psychologist can proffer is in the area of the evaluation of students' progress within a given course. I have previously stated that testing and evaluation is one of the areas in which clinical psychologists are presently involved in the higher educational milieu. However, this generally entails formulating efficient entrance requirements and assisting in determining which students meet institutional criteria for admission. When we talk about the involvement of the clinical psychologist in student evaluation, we should be referring to contributions beyond those of working in conjunction with college administrators and more specifically, those contributions which can be offered directly to the professor to help him to determine progress and achievement within a given course.

One means almost universally used to assess student achievement is the term examination, which may take one of many forms, varying from the essay type format, which requires the student to formulate long, organized types of responses to broad questions, to the short answer or multiple-choice type quiz. Examination can be used for a multitude of different purposes simultaneously. If graded and returned promptly to the student, the examination can serve as a prod to further learning by offering him direct feedback via the highlighting of his strengths and weaknesses. Additionally, on the college or university level, tests should ideally serve as a model for future professional and vocational examinations that the student is likely to incur in his post-academic pursuits. Thus, the form of his college examinations should be similar to those required for entrance into particular professional fields of endeavor.

Measurement of student achievement is indeed an integral part of fostering effective teaching. It enables the professor both to determine his overall success in stimulating achievement as well as to allow him to look at individual student attainment as a means of aiding him in finding ways to deal with varying learning styles with greater success. Thus, properly used, testing and assessment-evaluation can be much more than the rote process it so often becomes and can serve as a useful tool in the actual learning process.

Indeed there is more to student achievement evaluation than the simple determination of a grade. As stated by Glock (1971), "After we measure behavioral change, we must then interpret these changes in the light of the goals we have specified. Did achievement occur? Was it adequate? The feedback that we get through measurement helps us to evaluate progress and aids us in determining the effective aspects of teaching and what remains to be done." (p.629)

Glock and Millman (1963) have proposed a method for improving the validity of grades. They have presented a means of analyzing test scores which is both simple to use and which helps the teacher avoid some of the pitfalls of evaluating student attainment. According to Glock and Millman, evaluation is one-third of basic teahcer responsibility. The three responsibilities as stated are to decide what the teacher wants to accomplish with the class in general, which should essentially lead to a general statement of objectives, to provide experiences that will facilitate pupils' meeting of these objectives, and to determine whether or not these objectives have been met, via student evaluation.

Specifically regarding tests, Glock and Millman state that correct answers on an examination do not always indicate a grasp of the subject matter. For example, a student answering 13 out of 20 questions on a classroom test covering theories of organic chemistry has not necessarily learned as much or as little as 65% of the subject matter covered in the class, even though that would be the numerical grade that this particualr test would yield. If the test questions were made easier marks would be numerically higher, while if the test were made more difficult grades would be expected to run lower. As the authors state, "The actual score on a test does not tell us how well a student has mastered the material for which we are testing. To convert test scores directly to grades is meaningless, but test scores do permit us to make relative judgements about the student who took the tests. To arrive at a final grade, we need some idea of how...(an individual's) test scores and other measures of performance compare with those for other students being graded. To provide a basis for making comparisons, it is necessary to combine the component measures into a composite value or score."

This composite score is not necessarily arrived at by averaging students' grades on all quizzes and examinations given during the course, weighing each result equally, but is rather arrived at by determining which tests measure what factors and then weighting those exams which cover aspects of the course which are thought to be more important objectives more heavily than those which deal with less important course objectives.

Glock and Millman go on to discuss what should and what should not be considered in the determination of a grade. They state that course grades should ideally be clear and uniform in meaning to all who use them. Insofar as grades are meant to reflect learning achievement in a given course, factors such as neatness, effort, and other non-achievement factors should be excluded in a computation of grades. If the professor feels that these factors are worth noting, then they should be included in a separate, non-achievement grade or grades. Criteria for grading should be predetermined by educational personnel so that, ideally, students of equal ability taking the same course with different teachers would receive similar grades, admittedly a difficult goal.

Testing also is discussed in an article on the social consequences of educational testing by Ebel (1971). Ebel states that "Tests have been used increasingly in recent years to make educational assessments. The reasons for this are not hard to discover. Educational tests of aptitude and achievement greatly improve the precision, objectivity, and efficiency of the observations on which educational assessments rest. Tests are not alternatives to observations. At best they represent no more than refined and systematized processes of observation." (p.693) Among the pitfalls of testing mentioned by Ebel are the facts that it may lead to a narrow conception of ability, and encourage the student to pursue a single goal, thus tending to reduce students' diversity of talent. Additionally, Ebel suggests that the use of tests might encourage impersonal, inflexible processes of evaluation and determination resulting in a loss of human freedoms. He also states that the testing process puts an indelible stamp of intellectual status on an individual, which can do harm to his self-concept as well as lowering his educational motivation. This latter point is, however, more suited to a discussion of predictive tests of capacities and not those achievement tests with which we are primarily concerned. The author states that the main prupose of measurement is description and not prediction or control. He feels that if we know where things presently stand and if we have a relatively good idea of functional relations of what type of method leads to what result, than we are in a position to control and/or predict what will happen. The author feels that no purposes are served by prediction of the effects of intervention versus non-intervention, and that tests should be used less to predict achievement than to foster it.

Ebel proposes four means of using the testing process to alleviate some of the concerns over it. These methods entail emphasizing the use of tests to improve status rather than to determine it, broadening the base of achievements tested to develop a wide variety of talents, openly sharing test results with persons directly concerned with them, and decreasing the use of tests to impose decisions on others while at the same time increasing their use as a means of fostering better personal decision-making.

In summary, Ebel declares that while there are pitfalls inherent in the testing process, the consequences of abandoning the use of tests to measure achievement would be far greater than those resulting from their continued use.

Further implications of testing are discussed by Glaser (1963), who narrates that tests of achievement generally yield two kinds of information: the degree of achievement relative to course criteria; and an individual student's achievement relative to other students in the class. The latter, or criterion-referenced measures, rely upon an absolute standard of quality, while the former, or norm-referenced measures, depend upon a relative standard of achievement. Glaser states that "Criterion levels can be established at any point in instruction where it is necessary to obtain information as to the adequacy of an individual's performance. The point is that the specific behaviors implied at each level of proficiency can be identified and used before he achieves one of these knowledge levels. It is in this sense that measures of proficiency can be criterion-referenced." (p.519) On the contrary, however, norm-referenced measures **provide** little information as to the actual level of proficiency achieved by an individual student, but rather deal with his level of achievement relative to other students in the class. Thus, a student in one class might receive higher grades in a subject than another student who has learned equally as much but who is competing against a class of students who have learned more. This leaves us with information as to whether or not one student is more proficient than another, but does not yield any information as to the actual absolute proficiency of either. It is for this reason that Glaser advocates the use of criterion-referenced measures over norm-referenced ones, a conlusion with which we are in full accord.

Another factor mentioned by Glaser for application in achievement testing is whether results are intended to measure individual student achievement or whether they are intended to convey some information to the teacher concerning the effects of various teaching behaviors on learning. In devising a test that will differentiate among individual students at the end of course training, the teacher would begin by collecting data on a large sample of items relating to predetermined curriculum objectives. He or she would then separate test items by the frequency with which they were correctly answered. Those that were answered correctly by all students in the class would be eliminated for this purpose, insofar as they fail to differentiate between students in the class, while the remaining items could be arranged to yield a score distribution that would serve to discriminate between individuals in the class.

If, however, the test is devised to indicate the effects of teaching methods upon the class as a group, a different approach must be employed. One means of accomplishing this is through the administration of a test-retest format, in which students take a test before educational training and then again after the material is covered. For this purpose, items which show substantial variability within either the pre-training group or the post-training group would have to be considered undesirable, inasmuch as they might cloud the effects that would otherwise be attributable to the teaching variable.

Thus it can be seen that, depending upon the type of information that the teacher or professor is seeking, different approaches in test construction always are in order.

Previous mention has been made of the administration of tests and quizzes to foster educational accomplishment. This has been substantiated in an experiment by Standlee and Popham (1960), in which it was demonstrated that achievement was increased for those students in a course in educational psychology to whom weekly quizzes were given when compared to those students in the same class who were not so quizzed. These results were, however, diminished by the end of the course.

Variant student evaluation processes might be adopted to cater to specific types of innovative teaching. For example, in a study by Webb and Grib (1967) the use of student-led discussion groups was investigated as a means of heightening learning while maximizing student responsibility for their education. Although this study will be discussed in greater detail in a later section, it would be appropriate to discuss some of the evaluation procedures used in this type of learning situation.

Webb and Grib feel that innovative teaching methods should be accompanied by innovative evaluation procedures. Due to the fact that the student discussion techniques implemented in this study were designed to develop and foster comprehension, analysis, and critical thinking in the students involved, the authors felt that the usual tests were incapable of measuring these behaviors, as they concentrated primarily on course content. Thus, other means of assessment had to be devised.

One such means was the use of oral examinations over written ones in the attempt to sample the same type of behavior (oral contribution) that it was hoped would be developed through the group discussion techniques. Another instructor arrived at a final grade via the use of both written examinations and grading students' class discussions. A third method was based upon the rating of students by their peers in conjunction with other evaluation procedures. This was accomplished by periodically asking a class member to rate the performance of himself and fellow class members in light of the adequacy of their contributions to class discussions. One instructor who used this method found that the results of student peer ranking were quite similar to his own ranking of class members.

Despite the fact that all of these different means were tried, no single method was felt to be more satisfactory than the others. The authors feel that students soon learn to adjust their study habits to learn the material on which they are tested and not necessarily those objectives that are delineated in the course syllabus. They found that in those instances where students were not directly graded as to their performance in class discussions, these discussions were viewed by the students as being unimportant. Thus, to heighten student interest in them, grading the discussions themselves was deemed advantageous.

Thus far we have discussed three functions of test administration; namely, to motivate students toward further achievement, to determine the extent of this achievement, and to give the professor some feedback as to the success of his teaching methods upon the class as a group. Another aspect of testing that is often overlooked or underemphasized is its function in determining the manner in which the student organizes learned material. This facilitates the professor's understanding of his individual students and the way that they learn, and thus can help him to review and adjust his teaching methods in order to yield the largest amount of success among his students, both as a class as well as individually.

To prepare an examination that will serve this latter goal requires a greater amount of preparation time on the part of the teacher. It has been stated that the current workload of preparing lessons, grading assignments, holding conferences with students, and the like already consumes a great deal of time and that teachers are currently overburdened as a result. Accordingly, the added time that needs to be taken to prepare and to grade an examination that will serve a variety of purposes is thought by many to be far too overburdening for the teacher and an unrealistic procedure in this regard. To this I would reply that any method that results in improved teaching can in the long run become a time saver despite the fact that it may superficially not seem to be so. Improved teaching means less going over the same points that some students previously found difficult to grasp, as well as providing time-saving increments in a variety of other ways, many of which will come to light in subsequent discussions.

There is one aspect of testing and student evaluation that I have not yet mentioned which bears direct comparison to the psychotherapeutic process. In psychotherapy, the clinician may confront the client with rather probing and provoking questions, and he may in turn be confronted with such types of questions by the clients. In fact, client questions often evidence more insight than do the answers to questions posed by the therapist. Viewed from a broader scope, the learning process itself stimulates further questioning. It is through learning itself that we become aware of that which we do not know. If we truly grasp concepts that are presented to us, we should be able to formulate intelligent and pertinent questions; indeed, we should be driven to ask them. The nature of the questions we ask is very often indicative of our understanding of that subject. The clinician understands the importance of client questions, and he is able to learn a great deal about his client's thought processes through them.

These same principles can be applied to education in our means of evaluating student progress. For example, the teacher may decide to periodically ask students to compose a list of questions about a subject recently covered in class. This can not only aid in discovering those points that students have found difficult to grasp (which can be further explained), but also can indicate the degree of learning that has taken place in light of the depth of questions posed. Carried even further, the professor may even use this type of format in place of a standard final examination, asking his student to compose very detailed questions about the course content, rather than to compose responses to queries. To create such questions would certainly require both a degree of originality as well as a full understanding of those significant aspects of the course content. An even less rigid format could be adopted, in which the professor might ask students to informally discuss what they have gained from the course in a systematic fashion. As in the previous example of student-composed questions, this type of method would perhaps indicate the degree of true student learning better than a standard final examination might. Similar to the psychotherapeutic process, it also would enable the instructor to zero in on salient points and to probe more deeply into certain aspects in direct response to students' statements in a way that no formal examination can. Rather than being forced to interpret responses on a written examination, the professor can ask for direct clarification form the student in the discussion format. The one apparent pitfall of this type of procedure is to avoid grading students on the basis of their verbal capabilities. It is important to analyze student discussions on the basis of their content and not on the flamboyance of their presentation. The reticent student should be encouraged to participate in the discussion if a group format is used as opposed to an individual one, and in cases where the group method is employed, students who have failed to significantly evidence their progress can be spoken to in private at another time.

Thus, there are numerous contributions that the clinical psychologist can make to the areas of testing and evaluation of student progress, as well as in the areas of direct teaching methodology and translating experimental results into applied techniques.

Another possible area of contribution is in testing and evaluating new theoretical inferences impacting upon the educational process. For all his clinical training, the educational background of the clinical psychologist is rooted in an understanding of, and an appreciation for, research and experimental methodology. He should, then, be in the vanguard of those who offer their services to those educators who may be interested in evaluating new educational procedures. Once again, we tread on ground that comes close to the realm of the educational psychologist. Indeed, much of the latter's duties revolve about this type of research. Nevertheless, there is far too much pertinent research to be covered in this area to delegate this function to any one select professional group. The insight of the clinician is different than that of the educational psychologist. This means that the clinician might be able to evaluate certain experimental results from a different, yet equally valid, standpoint. Additionally, the clinician's orientation might enable him to design studies that the educational psychologist might not consider. Still further, being oriented to human interactive processes, the clinician might be in a better position to quantify the qualitative effects of student-teacher interaction than others involved in the field of education.

Acting in conjunction with others, the clinical psychologist can help in evaluating theoretical inferences as part of a team, wherein he can contribute his particular expertise while others with different orientations do likewise. The main difference between acting in this capacity and that of translating the results of experiments into applied teaching techniques is that the latter is centered around the psychology laboratory, while the former entails testing theories in actual classroom environments, turning, in a sense, the classroom into a laboratory of sorts. This affords less opportunity to allow for experimental controls and also may retard the formation of heterogeneous experimental and control populations. In either case, however, the orientation of the clinical psychologist can be invaluable in helping to highlight significant results.

Another possible area of contribution that the clinical psychologist can offer is in the direct application of knowledge of individual subcultural differences to heighten student learning. At first, these two endeavors might seem unrelated; upon closer investigation, however, some important parallels can be drawn. A majority of our undergraduate and graduate students are infused with so-called "middle-class" values and beliefs. It is safe to say that the middle class has looked upon higher education as a bridge to further advancement in society, both from an economic standpoint as well as one of social prestige. Parents who have felt that they were held back from advancement because of their lack of education often firmly believe that a college education will permit their children to attain a higher place in society and, in believing such, instill these feelings in their children. Thus, a large portion of the undergraduate and graduate student population is composed of individuals from middle class, American homes. Such students often are not exposed to other groups of individuals and are thus limited in their understanding of them. This can stand as an impediment to learning in terms of fostering erroneous knowledge of other groups, such as those which yield prejudicial attitudes. The formation of such erroneous concepts inhibits understanding both directly and indirectly, as it applies to our understanding of specific individuals as well as in fostering the mistaken belief that things can be so categorized. A penchant toward this latter behavior is significant of a diminished desire both to learn further and to correct mistaken beliefs.

The clinical psychologist is equipped to promote harmonious interaction between peoples, and to assist the consequent reduction of such aforementioned erroneous knowledge. One of the principles in promoting this kind of interaction is through intergroup contact. One way of accomplishing this is through field trips and field experiences designed to eliminate prejudices and to heighten an understanding of others. The amelioration of prejudicial attitudes can be more important in the teaching of some fields than in others. For example, in teaching a course in abnormal psychology or a sociology course about deviant groups, student learning would be enhanced in those cases where the individuals in the class looked upon the objects of their studies with empathy and understanding, rather than through myopic, prejudiced eyes. Such attitudes can be fostered through exposure. Field trips and community experiences have already been mentioned as one way of facilitating this exposure, but in some cases this becomes unrealistic in the teaching milieu. In such cases, the professor might consider other methods, such as inviting outside speakers who are knowledgeable in this area, or by utilizing descriptive and/or phenomenological accounts of the experiences of members of the lower-class as outside, supplementary readings. The breaking down of such barriers can be invaluable in fostering student learning in general, particularly since prejudices can be thought of as inappropriate concept formation. It allows an individual the mistaken luxury of thinking that he understands what he really does not, and, thereby inhibits him from seeking information that will change the way that he feels. This type of process can extend beyond the way we conceive members of different subcultural groups and can pervade our entire learning process in checking off the impulse to gain further knowledge. The individual who is aware of what he does not know is in a much better position to learn than the one who feels that he has no further knowledge to gain. Consequently, the teacher who attempts to expose his students to new and different ways of looking at things is serving to create better learners.

All of the contributions of the clinical psychologist to the world of higher education that have been touched upon so far involve looking at the learning process as the complex structure that it is, far more than simply imparting facts to students and routinely testing to gauge how much has been learned. We have been looking instead at a process that is far more complex and affected by behaviors and processes that are not always self-evident. This necessitates viewing the teaching process much as the behaviorist looks at life in general, with the attitude that for each stimulus there is a response, or, as the physicist shows, that for each action there is a reaction. In the educational process the same can be said. The professor can be perceived as a stimulus generator, with the nature of student responses being directly linked to the quality of stimuli being presented by the teacher. Effective teaching requires adequate consideration of a variety of factors including an accounting of individual student differences, a well organized methodology, an adequate understanding of the principles of learning, effective human interaction, and other behaviors that apply to student motivation and effect learning, employing testing as more than a simple indicator of fact memorization, as well as requiring that the professor have a relatively thorough knowledge of the subjects that he teaches.

In an experiment related to the above performed by Cooperman (1974), who studied the effects of urban laboratory experiences or the attitudes and self-concepts of undergraduate students, the following conclusions were presented:

1. Students who had the urban laboratory experience had more positive views of the inner city than did those who did not have the urban experience, which views were influenced by interpersonal relationships and experiences within the urban community and college seminars dealing with personal feelings, understandings, and attitudes.
2. Through the establishment of an inconsistency between student expectations and their actual experiences, it seemed possible to alter or modify student attitudes.
3. Following the experience, students reported that they had an increased awareness and acceptance of cultures variant to their own.

As I have previously stated, for many teachers the preceding represents a burden that is far too great for them to handle on their own. It is for this reason that the teacher needs avail himself of any valid consultation that is in the offing; perhaps no other single point better justifies the premise of this text. While effective teacher education includes giving prospective educators a background in many of these aforementioned areas, it would not be feasible to expect that any such program would be capable of developing the complex and varied expertise needed to maximize teacher effectiveness. Making use of other resources, such as the clinical psychologist, is the logical means of filling in such gaps of expertise.

There are, however, two major stumbling blocks to the implementation of what has thus far been discussed. The first of these is pride. For one reason or another some teachers feel resistant toward outside involvement in their realm, most especially in their classroom. Perhaps for some, this represents a loss of control, particularly in the case of the authoritarian teacher who relishes the power which he has over his students. Others who might be insecure about their teaching capabilities might fear such outside involvement lest it expose their inadequacies. In either of the above cases, consultation must be presented in a nonthreatening manner, so that the teacher understands that it neither threatens his autonomy nor exposes him to criticism. Perhaps the teacher who is likely to feel threatened by outside intervention might benefit from sensitivity training, a process which will be described later.

The second major stumbling block impeding the implementation of an outside consultation program or the incorporation of other professionals, such as the clinical psychologist, into the teaching program is that it is often difficult to assess areas in which teacher effectiveness can and should be improved. Barring any major incidents, the teacher might go on educating class after class in a style which could benefit from additional training, without that need ever coming to light. Insofar as grades are usually based upon teacher judgment, students in such an individual's classes might continue to receive average or even above average grades while in actuality learning less than other students receiving lower grades in the same course taught by different faculty members. There are many methods that can be used to help teachers identify their weak points, some of which will be fully discussed in a later section of this text. One means of doing so is through ongoing teacher observation and evaluation, which is presently done in some educational sectors. This method is most effective when it is accomplished in a constructive, nonthreatening manner.

Another means of helping the teacher gauge his effectiveness is via the utilization of student evaluations. This method involves asking students who have taken a particular course to rate their professor as to teaching effectiveness as well as other factors, such as personality traits. In a study concerned with analyzing such student ratings by Weaver (1960), the ratings seemed to have been biased by the grades that the individual students had expected to receive.

This bias was, however, found to affect ratings of teaching skills rather than the ratings of personality variables. While this method leaves itself open to student subjectivity and biases, it is a viable means of gathering information directly from the recipients (consumers) of an individual's teaching, which can be used in conjunction with other, perhaps less subjective, means of establishing a given teacher's good and bad points.

Still a third means that can be employed to gauge teacher effectiveness is through experimental means. Such a method might involve evaluating student progress in courses taught by teachers with differing, previously quantified styles, such as authoritarian versus passive guidance in delineating assignments. Upon completion of a semester's work, objective testing and other means previously described can be used to determine student progress and changes in motivation, self-concept, and the like, in the attempt to determine the effectiveness of one style over another.

Through the use of any or all of these means of assessing teacher effectiveness it is possible to determine which areas are in need of improvement. It is in this sphere that the consultation and involvement of the clinical psychologist can come into play in some of the ways that have been previously described. This involvement may even take the form of counseling for the teacher who is not performing up to par due to an emotional problem. While this type of involvement may be even more threatening to some individuals than the other types of intervention previously described, there are, no doubt, cases where such action will not only be well received but will also result in more effective teaching, which can then further foster the emotional adjustment of the teacher and thereby improve his teaching effectiveness. Thus, a cycle can be created through which many will benefit.

I have thus far touched briefly on the major areas incorporated into the premises of this text. We can now take these various components and analyze each to a greater extent in showing how the clinical psychologist can advance the higher educational process. Specific examples will be cited in support of this theory, as well as for their value in showing the reader some of the types of advancements that are being currently investigated or implemented to foster more effective teaching and learning, and which will lead to growth beyond the development of intellectual capacities or factual knowledge, extending to such areas as personality and character development.

Psychotherapeutic Analogues in the College Classroom

Let us proceed by pointing up some valid comparisons between the role of the clinical psychologist and that of the college professor. As I have previously stated, there are many analogies between the roles of these two groups of professionals (Sternlicht, 1965a). These comparisons are exceptionally notable when the latter conforms to the type of teaching structure which I feel produces effective education.

Both clinical psychologists and college professors can be conceptualized as being expert resource guides and consultants. In the case of the clinical psychologist, rather than directly seeking the source of an individual's complaints or problems and then attempting to formulate a series of changes that can be implemented to ameliorate them, the psychotherapist works with the patient in getting to the root of feelings and offering guidance and direction when necessary, while remaining fully aware that unless the client works his own problems through and arrives at his own conclusions, true insight will in many cases be minimal. Likewise, the same holds true for going about trying to change those behaviors which are deemed to be the cause of the client's problems. The psychotherapist takes on the role of a consultant, guiding the individual toward formulating his own changes, knowing that unless they come from the individual himself, true behavioral change is less likely to take place. Acting in the capacity of resource guide, the clinical psychologist will often refer a client to another source through which his problems may be solved either as a supplement to psychotherapy or as an alternative to it.

Forcing the client to come to his own realizations can be advantageous for a variety of reasons. Firstly, as has previously been stated, it results in true insight for the client in a way that no direct counseling can. Secondly, this type of method is likely to enhance an individual's self-concept in the realization that he is solving his own problems as well as in giving him the feeling that he is capable of doing so. Furthermore, it provides the client with a basis for dealing with his problems without help, at a time when he is no longer in therapy. Finally, the type of counseling and guidance offered by the clinical psychologist prevents the occurrence of a situation in which the therapist's own subjective feelings and emotions come into play.

The role of the effective college professor is often similar to the clinical psychologist's, in light of the nature of the guidance offered and in the kind of responsibility delegated to the student for acquiring his own knowledge. Serving in the capacity of consultant, the effective teacher places himself at the disposal of his students, in offering feedback as to the quality of his work, and guidance (even if relatively loose guidance) in helping him to improve the calibre of his presentations. As is the case with the clinician, the effective teacher knows where guidance ends and coddling begins, offering as much assistance as he deems necessary to pursue the most efficient path to acquisition of knowledge. As does the psychotherapist, the college professor should not allow his own subjective feelings and preferences to intrude upon his guidance. For example, if a student's choice of topic for a presentation is not to the teacher's liking for subjective reasons, he does not attempt to discourage him from pursuing it, nor does he allow such feelings to intrude upon his grading of the presentation.

In the role of resource guide, parallels can again be drawn between the clinical psychologist and the college professor. As does the psychotherapist, the college teacher freely directs his students as to where they can obtain answers to specific questions, either because the teacher himself is unfamiliar with the answers to specific questions, or as a means of further encouraging the student to assume the responsibility for securing his own knowledge. Here, while the student might initially feel that this type of approach is indicative of the professor's not really caring to become involved or conceivably even as a rejection of the student himself, the increments to be gained in the sense of satisfaction that the student comes to feel, as well as a general enhancement of self-concept, soon outweigh any such initial feelings.

Just as the clinician's approach allows his client to talk about whatever is on his mind by not rigidly presenting topics for discussion during a psychotherapeutic session unless such action is merited, the educator who allows, or for that matter insists, that his students use independent thought and study methods in their pursuance of knowledge is permitting members of the class to both find a topic that is stimulating to them (resulting in heightened student motivation) as well as instilling good independent study habits.

Perhaps the roles of the effective college professor and clinical psychologist bear similarities in the fact that both function in the capacity of educators. While the clinician's role is a complex one, he basically educates his clients (or reeducates them), not in an academic sense, but rather in an emotional and social manner. Nevertheless, just as I have stated that true education can only take place when growth is a result, the educator also is striving to foster emotional and social maturity, in addition to academic knowledge. Doing so requires that both the clinician and the educator take the approach that I have outlined, i.e., acting in the capacity of resource guide and consultant. For the teacher, who is also burdened with an ongoing assessment of progress, giving lectures, and other educational duties, there is perhaps a greater need to seek the consultation of other professionals in formulating an effective educational program than there is for the clinical psychologist. Additionally, the educator's life is further confounded by the fact that he has a limited time in which to achieve his student educational goals, in that he is working within the fixed time interval of a semester (although the most successful educators might find students enrolling for other courses that they teach as a result of student's prior educational experience with them), and as such must meet his objectives before the term is completed.

The educator's role is additionally confounded by the volume of individuals with whom he must deal. Not only are there usually more students in a single college class than in the clinical psychologist's entire caseload, but also, due to the nature of the educational system, the turnover of students from semester to semester means that over the course of the years a significantly greater number of individuals are worked with. Thus, the educator deals with more individuals over shorter periods of time, while attempting to meet a complex series of objectives. In the endeavor to do so it is only logical that the latter be in the vanguard of those offering such assistance.

In an earlier section, I have touched upon various aspects of the learning process and its components. At this point, we can delve into these various components more thoroughly, examining each from the standpoint of linking educational and psychoanalytic theory.

We can commence by looking at the recipients of the educational experience, the students themselves. I have stated earlier that one of the keys to devising an effective educational program within a class is to have an adequate knowledge of the students that comprise it. No matter how competent and knowledgeable the teacher, his educational success relies to a large extent upon his ability to recognize and to accommodate individual student differences, as well as the needs of the class as a group, much as the clinician is called upon to do in group counseling. The educator is forced to walk the tightrope between altering his methods to accommodate individuals in his classes, while not overextending himself in this endeavor to such a degree that the learning of the class as a group is retarded.

There are a variety of studies that point up the effects of individual student differences on learning. I will cite some of them at this point with dual intention, both for their intrinsic value as well as in highlighting the effect of such differences on the educational process.

One such study was performed by Zimmerman (1956) in the attempt to determine what motivates college students. Positive items most frequently listed included instructor's knowledge, well-defined course objectives, and the practical value of the course itself for earning a living. Negative attitudes which decreased motivation were the instructor's use of sarcasm, fear, and self-approval. Such findings are more applicable to group application than to individual students.

A study which relates individual student differences to their preferences in educational style is exemplified by that of Stranges (1970), in which open and closed minded students were questioned as to whether they preferred lecture or discussion educational formats. Open or closed mindedness was determined through the use of the Rokeach Dogmatism Scale. Forty-six students were identified as being in each group after the scale was administered to 284 individuals, after each had listened to a discussive and a lecture method on two 10-minute audio-visual tapes. Students were asked to state which method they found preferable and their reasons for same. Responses showed that 35 closed-minded and 37 open minded students preferred the discussion approach. These results were not statistically significant. However, other data showed that students who preferred the expository method favored little class participation, while those who chose the discussive method enjoyed being active members in the learning process. While the results of this particular study were not statistically significant, it is nevertheless this type of research that enables teachers to gear their methods to student preferences in the attempt to increase motivation and facilitate true learning.

Regarding intellectual capacities, we can also find differences among college students. Many studies have been performed that relate to grouping and peer interaction. While some of the principles of grouping have been made on the undergraduate or graduate educational planes. I am referring here to the desirability of a "two-track" curriculum offering, one which would take cognizance of differences in intellectual resources in college students, and one which also would insure that certain basic courses are taken by all. It is quite likely that one of the major reasons why this has not been done is the view that undergraduates represent a fairly homogeneous group, at least in terms of intellectual capacity. I am of the opinion that this belief is mistaken. First of all, even were this to be the case, intellectual capacity itself is meaningless unless considered in the light of other characteristics such as motivation and other personality factors. It is likely to be within the realm of any teacher's experience to have found students who achieve greater academic success than others of higher intellectual capacity as a result of increased effort, receptivity to suggestions, and other positive attitudes. Thus, intelligence itself might bear only a minimal relationship to actual overall education achievement. Using this as a basis it is easy to see why I feel that college students are by no means homogeneous in intellectual capacity. Students who reach the undergraduate and graduate educational levels do so as a function of intelligence, motivation, and effort, rather than on intelligence alone. Thus, the opinion held by many that students at the higher educational level are more or less of the same intellectual capacity is not entirely correct.

Grouping students with this consideration in mind bears directly upon many of the previous discussions which refer to the burden placed upon the instructor to gear his teaching to the individuals in the class, while at the same time not holding back the overall progress of the group. Were students to be grouped according to criteria such as intellect, then the amount of variables impeding the use of this type of approach would be lessened greatly. Insofar as concerns establishing groupings of this type the expertise of the clinical psychologist could be helpful, due to his orientation toward testing and evaluation of various capacities, it would be logical for the concerned educator to avail himself of his services. Indeed, as was previously stated, the clinical psychologist working in conjunction with college administrators, often is involved in the function of evaluating college students. The clinician can either make this data available to the professor interested in grouping his student in such a fashion, or he can initiate such a grouping at the instructor's request.

Groups could be arranged by factors other than intellectual capacity. Grouping could be accomplished merely as to student preferences, as that of lecture versus discussion instructional methods. Little prior evaluation would be necessary in taking this type of approach, most likely no more than a brief questionnaire presented at the time students register for their courses. The two-way increment to be gained by the establishment of this type of procedure would be in heightened student satisfaction at being able to work within the framework that best suits them, as well as in an easing of the instructor's burden in being able to suit his teaching methods to the students in his class. Another grouping method, proposed by Lamb (1976), calls for the determination of class inputs, intellectual growth objectives, optimal structural design, and appropriate leadership style in grouping students.

Beyond the procedure just outlined, the clinical psychologist could aid in groupings as to personality factors through use of the type of research previously outlined, such as that by Zimmerman (1956) and by Stranges (1970).

Another grouping procedure that might be attempted with the aid of a clinical psychologist is that of trying to match the method of testing and evaluation of student achievement to individuals in the class who perform better and more easily evidence their achievement through the use of one method over another. I have already discussed the subject of testing and evaluation in some detail. It has been demonstrated that some students perform better on some types of examinations than on others. For example, the student who is not very eloquent or is shy might encounter much more difficulty with an oral final examination than the student who feels comfortable with this type of approach. Regardless of the respective level of educational achievement, the latter student is likely to seem to have learned more than the former. An attempt to administer the type of examination with which the student will feel most comfortable and which will best indicate his true level of educational achievement throughout the term. I mention the use of this method with trepidation as it would, no doubt, result in added work for the educator. Not only is there the added task of discerning which method is most efficacious with each student, but he must also devise a greater number of examinations and must grade each accordingly. Once again, however, I emphasize that were the educational sector to make use of assistance which can be proferred by other professionals (such as that of the clinical psychologist), the professor might find the workload placed upon him to actually diminish as his teaching effectiveness improves. Grouping could result in less class time being spent going over certain points or topics which a heterogenous group may find difficult to understand. It also might result in the need for fewer examinations, were a method to be employed that would accurately ascertain student achievement at fixed intervals during the semester.

All of the preceding serves to point up the importance of recognizing and understanding individual student differences in intellect, preference of one educational style over another, and other personality characteristics. We can now discuss in detail a factor which was previously dealt with to a lesser degree in an earlier section of this text, that being encouraging the student to become actively involved in the educational process and assuming the responsibility for securing knowledge in the higher educational format.

As has already been previously stated, the students' acceptance of responsibility for learning in the higher educational format is advantageous on many counts. It is only through taking an active role that growth, an important indicator of true learning, will be evidenced. Such acceptance of responsibility, in addition to resulting in heightened learning, also prepares the college or university student for later real-life experiences in which he will be asked to proceed upon a course of action with little or no guidance. Furthermore, in allowing the instructor to assume the role of resource guide and consultant, more time is left available for devising a truly effective educational and evaluational program.

Patton (1955) has conducted a study of the effects of student acceptance of responsibility and motivation on course behavior. Three approaches were taken in this analysis: a comparison of the traditional teacher-responsibility method versus a student responsibility method; predictions of acceptance or responsibility and other reactions early in the course from two motivational variables, those being dependence-independence of traditional authority figures and need achievement; and the prediction of certain reactions late in a course from a measure of the degree of acceptance of responsibility throughout the course.

Regarding the first analysis, the teacher-responsibility method was expected to minimize student acceptance of responsibility while on the other hand, the student-responsibility method was expected to maximize such acceptance. For study purposes, the latter or student-responsibility group was deemed the experimental group, with the teacher-responsibility group designated as the control one. Findings indicate that members of the experimental group, in contrast with the control group, evidenced greater satisfaction with the course and displayed superiority in being able to actually apply learned subject matter, in addition to evidencing greater interest in additional courses of study in the same subject. The two groups did not differ, however, in the amount of learning as measured by an objective, multiple choice examination, nor in their perceptions of the amount of learning that had taken place.

Regarding predictions of behavior early and late in the course, dependence-independence of traditional authority figures and need achievement had differential effects upon student behavior. The author suggests the need for further research which would involve a refinement of measurement of acceptance of responsibility, a refinement of the motivational measures used, and a search for other relevant motivational variables and other kinds of student behavior.

Some students reject this type of approach for one reason or another. A study carried out by Landgraf, Baty, Tebbe, and Ammonds (1958) attempted to determine some of the reasons that cause students to reject this type of teaching approach. Subjects interviewed were those who had rejected taking an introductory psychology course which featured an independent attack on psychological research problems. The reasons stated for nonacceptance by the 27 out of 30 individuals who did not take the course were varied, and they included such responses as they felt the course would be valuable but was too personally threatening, or that they did not have the time to devote to it. Some even expressed the opinion that they lacked the intellectual ability or necessary creativity to succeed within this type of format.

It is not unusual that students might feel this way, especially when consideration is made of prior education. Too often we come to believe that education involves listening to a lecture by the professor, reading the required texts, and being able to correctly answer examination questions. This is probably a result of much of the educational training that takes place on the elementary or secondary levels of education. Indeed, at these levels independent action is often met with a less-than-enthusiastic response by the teacher. The student may even be penalized for evidencing independent thought if it drifts away from the strict, teacher-imposed guidelines. With this type of orientation, over a period of up to 12 years, it is not unexpected that some students would fear the type of approach through which they would be made accountable for securing their own knowledge. Perhaps students who evidence such fear should be desensitized in this regard. One means of accomplishing this is through sensitivity training, which will be fully discussed in a later section of this text.

Regarding the trend toward student responsibility in learning in the higher educational milieu, Walker and McKeachie (1967) have stated that "One of the major trends in college - and university-level instruction is an increasing emphasis on student-centered teaching as opposed to instructor-centered handling of courses. This trend is a product of a number of factors. Most important, perhaps is that the student of (today)...is different from his earlier counterpart. The college student of today is more highly selected on the basis of intelligence, partly because of the increased difficulty of getting into an institution of higher education; he is better prepared academically because of increased quality and range of high school instruction; he is better oriented toward learning and toward doing well...Whatever the reason, the student of today can be entrusted with a greater degree of determination in his own educational development than students of the past. Because they have been so entrusted in some instances, contemporary students have come to expect or even demand it." (p.38)

Walker and McKeachie are representing the other side of the coin. The student they describe is amenable to accepting responsibility for his own education, quite unlike those discussed by Landgraf, Baty, Tebbe, and Ammonds (1958). While the latter study took place nine years before the study by Walker and McKeachie, it is reasonable to expect that today's undergraduate or graduate student might fit into either category, accepting or rejecting the idea of assuming educational responsibility, depending upon prior educational orientation.

There are numerous other studies that examine the efficacy of student-centered teaching. One such study by Grottenthaler (1968) illustrated that improved performance can be a result of purposeful and insightful efforts to develop critical thinking. Another study, by Kidd (1968), revealed that shared responsibility for learning between instructor and student appeared to work better in a small discussion group format than in a lecture-discussion approach. Of the students examined, it was found that more students seemed to prefer the lecture-discussion format over the small group discussions, which the author speculates may be a resultant of the fact that the former method is geared more toward traditional intellectual learning, while the latter often involves social-emotional or human relations learning, which some students feel threatened by.

Kidd further speculates that this preference also may reflect a prior educational conditioning, in which intellectual learning may have been emphasized.

In regard to directing teachers toward initiating self-directed learning, Johnson (1974) has found that the more traditional lecture-discussion methods of teacher education are equally effective in encouraging teachers to adopt student-centered teaching methods as does an individualized mode of instruction. Further, being predisposed to individualization in the classroom was not significantly related to one's success in an individualized mode of instruction.

Other interesting studies in this vein have been performed by Milton (1959, 1962), who evaluated student learning without class attendance. In the earlier study (Milton, 1959) a large group of first-quarter introductory psychology students did not attend class. Findings showed that this group performed equally or better than the group who did attend class when viewed from an academic standpoint. Furthermore, the effort expended by the "non-class" group surpasses that of the "in-class" group. Milton states that at the onset many of his colleagues questioned the fate of members of the group that did not attend classes, expressing fears as to what extent members of the group would fail to develop an interest in psychology, whether or not the students would suffer as a result of not being exposed to the professor's wisdom, whether the students would be harmed by such a procedure (especially in light of the fact that most members of the experimental group were freshmen and sophomores), and whether such students could actually learn independently of class attendance. Milton states that when the results of the study were announced at the end of the quarter faculty members were generally incredulous. Obviously they feared that the success of this method implied that there was no need for teachers. Milton does point up the fact that a valid criticism of his study lies in the fact that academic achievement itself was solely measured and that there was no effective way of measuring other benefits that may come about as a result of class attendance which were not indicated through the administration of ordinary subject matter tests.

In a study similar to those performed by Milton, Jenson (1954) found that students who were given an opportunity to pursue independent study, as opposed to those who attended class regularly, did not perform as well on a test of facts and principles but were equally versed in applying learned material. Although this study is, in part, contradictory in results to those of Milton, it nevertheless shows that learning can take place which is independent of the classroom.

Along the preceding lines, Reisser (1974) has attempted to form a facilitation process toward effective self-directed learning. Among the points presented, the author states that to facilitate such learning the student should be helped to: (1) identify goals for himself; (2) plan activities which work toward these goals; (3) find ways to evaluate progress; and (4) take major responsibility for his or her own growth. Reisser additionally stated that such a facilitation process involves assisting the learner to engage his interests and enthusiasm, assess his competence in dealing with unfamiliar data, new problems, skills, etc., consciously use coded organizers (concepts or themes which organize the examination and communication process), respond to questions which stimulate effective reporting, utilize feedback, and gain competence through practice. The author concludes that such a facilitation process should effectively encourage student acceptance of responsibility, the growth of responsiveness, and the attainment of further competence.

The importance of having students discover facts for themselves fits well into the orientation of the behavioral psychologist as evidenced by an article on education by perhaps the most eminent behaviorist of modern times, B.F. Skinner (Skinner, 1968). Skinner states that student discovery is of the utmost importance. For example, in the study of science Skinner states that we should "Let the student learn from nature, not from what others have said about nature. Let him go directly to the facts, to things, which alone are incorruptible. The principle is supported by Pascal's earlier observation that the arguments we discover for ourselves are better understood and remembered than those we get from others." (p. 706) Skinner goes on to state that it would be unreasonable to expect students to be able to secure all knowledge on their own, especially when pursuing the subject of science. Thus, the determination of how much is to be learned independently and how much should be directly taught by the instructor are related to the available time and energy of the teacher and his students taking into account the efficiency of teaching methods.

The effect of the personality of the group leader in a student-led discussion group in sex education was examined by Cohen (1974). The three hypotheses advanced were:

1. Participants' evaluation of their group experience and their group leader could be predicted from the leaders' scores on a personality scale.
2. Participants' change in attitudes related to the course would be related to personality scores of the leaders.
3. Participants' changes on some variables will correlate with the leader's scores on particular personality variables (i.e., the "modeling effect").

None of these hypotheses was confirmed. However, Cohen found that the participants' perceptions of the experience were related to a variety of factors, including perceptions of the leaders, reactions to the leaders' behavior, perceptions of the group atmosphere, ratings of the group level of self-disclosure, and several structural dimensions.

An interesting study that attempts to measure the importance of active versus passive participation of students is that which was performed by Watts (1967), on the relative persistence of opinion change induced by active compared to passive participation. Subjects consisted of 140 students in an introductory educational psychology course. The method employed involved determining whether opinion change would be more persistent in individuals asked to write an article advocating an attitudinal position (active) than in those who were asked to read a persuasive message arguing in favor of the same attitudinal position (passive). The results indicated that active involvement was positively related to persistence of opinion change, as well as to recall.

Still another study along similar lines is that which was initiated by Hunkins and Shapiro (1967), comparing two teaching methods as to their effect on critical thinking skills in students. The two methods contrasted were the case method, one in which students were told the exact nature of the problem to be analysed, asked to make suggestions as to how it can be done, and instructed to gather the information needed in accordance with these suggestions, versus the traditional text-book educational method. The case method was taught to stimulate the formation of principles for action--to think critically. Students were divided into two groups, experimental and control, with the former participating in the case method while the latter received traditional education procedures. Form A and B of the Behavior Preference Record was administered before and after educational training. Results of the study indicated that there was no significant change in the critical thinking abilities for those who were involved in the traditional lecture text-book class, while those in the case method, or experimental group, demonstrated more effective stimulation in critical thinking abilities.

A study performed by Ripple (1963) investigated the comparative effectiveness of a programmed text with three other methods of presentation in order to determine the effect of active involvement and reinforcement on learning. On the basis of the evidence obtained, the author concluded that active involvement contributed to increased student learning.

A final study relating to active student participation that merits mention is that performed by Bills (1952) investigating student-centered teaching. In this experiment, one class of general psychology students was taught by the student-centered method and compared to a matched group of students taught by the lecture-discussion method. No difference was found in the groups in the amount of text-book material learned; however, when an evaluation was performed at the end of the course it was found that the student-centered method had fostered more positive attitudes in group members toward psychology than did the lecture-discussion method.

While the results of the studies outlined are often inconclusive from a statistical standpoint, it should nevertheless become obvious that it is preferable to encourage students to accept responsibilities for acquiring knowledge from more than one standpoint. Firstly, most would agree that a degree of this responsibility is necessary, expecially at the higher educational levels so as to prepare students for post-graduate employment. Indeed, in many cases where this type of approach is met with resistance by students, reasons can be traced to the lack of this type of encouragement in their elementary and secondary education. Through recognition of this fact it might be possible to adapt educational methods at this level in a way that will both eliminate student fears and resistances, and even to motivate students to seek this type of educational approach.

Secondly, even were learning to be equal through the use of traditional methods, the student-centered method would allow instructors more time to develop a sound educational approach, to consult and direct students to the degree deemed necessary, and to devote more time toward developing effective means of analyzing student progress.

Finally, many of these studies seem to show positive growth in non-intellectual areas when student participation is active rather than passive. This is the kind of growth which I maintain must take place in the true learning situation and as such is a strong point in favor of the adoption of the student-centered method.

The facts as presented also show another side of the coin, that being that the teacher's expertise in the subject or subjects which he teaches does not necessarily make him an effective teacher. The reader might well be able to recall a time during his own higher educational experience in which he found an instructor who was well versed in his knowledge of subject matter, yet who was unable to communicate such knowledge to the class or to hold the students' interest. This is due in part, at least, to a lack of understanding of student behavior and motivation as well as a failure to account for individual student differences. I am neither saying that teacher expertise inhibits effective teaching nor that expertise and incompetance go hand-in-hand. However, in cases where it does it is counterproductive to either let it continue, forsaking effectiveness for expertise, or to terminate the individual's teaching services and forsake his expertise. What can and should be done is to develop a means of recognizing the problem and of implementing an effective program to irradicate areas of incompetence. In this endeavor, the clinical psychologist can contribute greatly through either active program development or consultation with the instructor. Thus, the clinical psychologist, with his knowledge of human dynamics can not only help to identify and deal with individual student differences, but can also serve to point up the value of this recognition to educators presently unaware of the relationship of this factor to the development of effective teaching methods.

The Learning Process and its Components

Curriculum and methodology:

In an earlier section I have touched upon the basic importance of a well designed teaching curriculum and a well developed teacher methodology. As was shown to be the case with individual student differences, the importance of curriculum and methodology often are underestimated by the educator who, despite his expertise, still finds himself in a position of being a less than adequate instructor. In this section I will delve more fully into the areas of curriculum and methodology in presenting some major theories and research that have bearing in this area, while linking this to theoretical contributions of the clinical psychologist.

As I have stated, to be most efficient teaching methodology must be based upon sound educational and psychological theory. The preceding section has shown that educational progress better occurs when the student is actively involved with the concepts and materials being dealt with. The teaching methodology and curriculum play a major role in fostering this type of active involvement.

The curriculum itself must be considered in light of student goals. Dependent upon what we want to accomplish with our students, the shape of the curriculum can take many forms. For example, different courses serve different student populations; a course may cater to students who are terminal majors in the subject, who are majors in the subject and are preparing to go directly on to a higher educational level within the field, and to those who are majoring in other subjects and taking the course either out of interest or to fulfill undergraduate core requirements for graduation. The curriculum is influenced by the varied goals of these groups. Thus, the instructor should attempt to determine the composition of his classes in this regard and base his course curriculum, in part, upon this determination.

Besides that of student orientation, there are other factors which come into play in the instructor's curriculum development. Pressures as to what should be included in a given course can come from college or university administration, other departments within the institution, other staff members within the department, and society in general. These various interests often must be taken into account before the instructor can fully integrate his objectives and goals, and they further complicate curriculum development. The instructor must take what freedom he is given by his colleagues, couple this with whatever information he has on his student population, and come up with a course curriculum that serves as many ends as is possible, without making the course curriculum so generalized that few students obtain any real benefit from it.

On the other side of the coin, there is a need to keep the curriculum from becoming so specific that it caters only to those who intend to advance within the subject. For example, in devising an introductory psychology course the professor must realize that only about one in ten students who register for the course will end up becoming psychology graduate students. Gearing the course for this group would not serve the needs of the other 90% who are not interested in doing graduate work in psychology.

Thus, curriculum development can be a difficult task. As stated by Walker and McKeachie (1967), "Within the entire curriculum, it is not too difficult to tailor special courses to particular needs. In the case of a single course, it can become quite difficult to meet highly diverse goals and individual needs." (p.4)

In a study related to curriculum development by Fuchs, Klare, and Pullen (1957), 200 students were asked to rank 16 topics based on chapters in a psychology text-book, with regard to five dimensions, in the effort to help devise an effective course curriculum. While the specific results themselves are not essential to this discussion, the dimensions themselves, in the order of importance to students, were (1) usefulness; (2) interest; (3) ease of understanding; (4) organization; and (5) new information.

Studies such as these can be useful in conjunction with other means of trying to establish a curriculum which will be satisfactory to students, which will result in true learning, and which will satisfy departmental and institutional requirements.

Curriculum development is directly related to the establishment of goals and objectives for the course. Both curricular and goal decisions are more important to the organization of courses labeled as elementary or introductory than they are to the organization of more advanced or technical courses. This is because of the fact that there is more leeway in the professor's development of the introductory or elementary course than there is in the advanced course, where curriculum requirements are often proscribed. It is important to realize that different disciplines require varying initial orientation. For example, in the study of economics, there are fewer initial concepts which must be initially mastered by the student than in the study of mathematics, where certain skills must be developed and mastered before the student can move on to higher levels. Thus, in addition to other factors, the instructor who teaches the elementary or introductory course in a subject must attempt to isolate those skills which will be important to students further pursuing knowledge within the field, and then he needs to adequately cover these topics during the course of the term.

The nature of the curriculum is exemplified in the research of Wolfie, Buxton, Cofer, Gustad, MacLeod, and McKeachie (1952), where it is applied to undergraduate instruction in psychology. I am presenting their findings here, as I feel that they are applicable to other higher educational disciplines. The authors feel that, at the introductory level, courses should be centered around a series of problems of immediate and personal student interest. In doing so, the instructor must be certain that points which are essential to the course are not entirely neglected as a result of apathetic student attitudes. The authors point out that introductory psychology can be taught from either of two perspectives. The first of these is the cross-sectional approach, in which contemporary dynamics and causation are analyzed. The second approach is that of a developmental or longitudinal orientation, in which the origins of certain phenomena are investigated and their development traced from inception to contemporary importance. It is recommended that the instructor decide which of these methods will be adopted and not to try to combine the two. Courses at the introductory level in other disciplines might very well be approached from a number of ways and the same consideration should be given in deciding which method to use. The choice depends largely upon the attitudes, skills, and enthusiasm of the instructor, as well as upon student orientation and preferences. In the development of curriculum for the introductory or elementary course, the instructor must be aware that such classes will be composed of students with varying degrees or interest in the subjects; some will be terminal majors in the subject while others will be pursuing fields that are unrelated.

This is true to a lesser extent in devising a curriculum for core courses which, while not specifically catering to majors within a subject, are usually taken by students with an interest in the field. Thus, the core course is designed to provide the student with an adequate sampling of the fundamental problems, facts, theories, etc., within its subject boundaries. Since many students who take core courses are majors in the subject, skills should be imparted which are necessary for those going on to advanced courses.

The curriculum of the advanced course is most likely proscribed and is too specific and dependent upon the subject being taught to discuss in this context. However, as the majority of students taking advanced courses in a subject are majors in the field, information should be as specific and goal-prescribed as is necessary. Student interests are usually accommodated in the advanced course, particularly in the freedom to choose specific topics of research.

The preceding shows that not only are the topics to be covered in individual courses essential in the higher educational format, but so is the overall curriculum within each educational discipline. Courses should be presented in as logical a framework as is realistically possible. Along the continuum from introductory to advanced courses, subjects covered become less dependent upon student interests and increasingly more dependent upon facts and skills deemed necessary for the student to progress within the field.

The clinical psychologist can aid in the development of the curriculum in a variety of ways. Through testing and evaluation he can aid in finding out the student composition of elementary and introductory courses in regard to interests. Thus, for example, the relative percentages of students who will be majoring in psychology can be determined in an introductory psychology course. This type of information can not only be useful to the instructor teaching a course, but it also can be used by administrators and department heads in creating enough courses to accommodate student interests and needs, and in helping to formulate topics to be covered in individual courses. Such testing and evaluation can either be performed on an institution-wide basis, at the direction of the administration, or can be done in conjunction with the teacher in analyzing the orientation and interests of students within a particular class. The psychologist can then work directly with the instructor in devising an approach which will integrate the important material that must be covered in the course in a manner which will facilitate student interest and motivation. The psychologist also can aid in the establishment of a curriculum which will not only yield academic achievement but which will also result in student growth through efficient organization of material to be learned. Acting as a consultant in this capacity, the clinical psychologist must make his contributions in a manner which is neither too threatening to the instructor nor which results in diminished academic achievement.

We can now expand our discussion of curriculum to one which examines the efficacy of using certain tools over others. Some of this relates more to teaching methodology than it does to curriculum, per se. Insofar as a complete discussion of methodology will be included in this section, I will make no attempt to categorize the information presented as to whether it falls under the realm of curriculum development or methodology, specifically.

Perhaps the most important single tool with which the instructor worked in teaching a course is the textbook. While the instructor may rely too heavily upon this instrument, properly selected and used the textbook can facilitate the development of effective learning. Walker and McKeachie (1967) have prepared a list of educational objectives that are served in varying degrees through the use of textbooks. That list reads as follows:

1. Goals for which textbooks are useful: communication of facts; communication of elementary concepts; and integration of the course material.
2. Goals for which textbooks have limited use: introduction of the student to the full range of the subject matter; communication of the basic attitudes of the discipline; communication of the intrinsic interest of the subject matter; and the development of selected intellectual skills.
3. Goals for which textbooks are unsuited: presentation of the newest developments of the field; provision of individual guidance and monitoring; and provision of suitable identification model for the student.

The choice of which textbook to choose (should the instructor wish to use one) is often a complex decision to make. The choice depends, in part, upon the quality of a given text. This is open to subjective interpretation on the part of the instructor, but some studies rating the efficacy of using one text over another can often be found which can be of aid in determining which to use, e.g., Contemporary psychology. While the choice of text is up to the teacher, the clinical psychologist might help in making the teacher aware of the benefits that might be incurred in choosing one type over another, such as a programmed text over a conventional one. This more or less falls under the proposed realm of the psychologist translating the results of empirical studies into applied teaching techniques.

The use of paperback books has been increasing in the educational format either in place of, or in conjunction with, the use of standard textbooks. Advantages of using paperback books over standard texts are multifold. Firstly, in using paperbacks the instructor is able to choose those books which fall into direct line with established course goals and objectives. Secondly, the use of a variety of different paperbacks allows for individual topics to be covered by authors whose expertise falls within them. Thus, rather than relying on one author's expertise in a broad range of areas, material by different authors can be integrated into the course. Paperbacks are also less prone to become out of date than are conventional texts. Because they only cover selected parts of a field, they are more easily updated and revised than is the standard text, which attempts to cover a broader area. Finally, in that they deal with specific topics, it is easier to present alternative treatments of controversial subjects, whereas a textbook might be limited in doing so as a function of alloted space.

In some cases where a conventional textbook is employed, the instructor might find it necessary to integrate supplementary texts into his teaching of the course. Oftentimes this is done to compensate for weaknesses in the main text, but the use of supplementary texts also might arise where no single text meets the instructor's standards. Another possible reason for the inclusion of a supplementary text is discussed by Walker and McKeachie (1967), who propose that a supplementary text can be useful for multiple coverage of difficult areas which the student has trouble mastering. Thus, the instructor might assign that students read the treatment given a topic in more than one textbook, in the hope that it might enable them to master difficult concepts. It is felt that the variety of approaches incurred through the use of this method would aid in the assimiliation of the subject matter.

Before moving on to other instruments available to the educator, the topic of programmed texts should be presented. The programed text presents material to be learned in small steps, arranged in such a fashion that learned material can be built upon as the course proceeds. Such procedures usually include periodic quiz sections in which the student must correctly answer questions pertaining to material covered in the text. This provides the student with performance feedback and further enables him to reread material that he or she is failing to grasp.

Programmed material is usually carefully prepared more so than is the standard textbook so that one step follows logically from the preceding one. Additionally, there is usually extensive pretesting of programmed texts to determine their effectiveness. It can also be said that the programmed text is less likely to be influenced by author subjectivity, in addition to the fact that its very nature makes it less likely to be affected by gaps in author expertise.

One advantage of having students learn from a programmed text over that of the lecture procedure is that the former allows students to progress at a rate commensurate with their abilities, while the lecture, in being addressed to a large group, cannot make similar allowances for individual students. Furthermore, learning via a programmed text forces the student to take an active role in the learning process, the importance of which has been previously stressed.

In a study by Daniel and Murdock (1968), designed to determine the effectiveness of learning from a programmed text compared with a conventional text covering the same material, 575 students at the University of North Carolina were divided into two sections, the first being the group to learn from a programmed text and the second using a conventional text. At the culmination of the semester, the authors found that the programmed group averaged 10% higher in their scores on multiple-choice test items, and 7% higher in grades on essay questions.

A device which perhaps best exemplifies programmed instruction is the teaching machine, which presents the student with a series of questions in predetermined sequences, in the attempt to provide immediate knowledge of results to the learner himself. As is the case with the previously described programmed text, the teaching machine allows the student to progress at a rate commensurate with his ability and understanding. The teaching machine has been employed for two separate purposes. The first is an evaluational one, in which the machine is used to provide a prompt knowledge of conventional test results, as a supplement to normal teaching procedures. In its other use, the teaching machine is employed as a substitute for other teaching methods. The degree to which the instructor relies on this use is dependent upon his subjective feelings, the time available for direct instruction, and other factors.

In either case, with the increased use of computers the use of teaching machines might be expected to increase. Computers expand the limits of ordinary teaching machines, in terms of allowing them to draw upon their vast memory systems. Thus, an almost limitless amount of special programmed instructional means can be made available to students simply by pushing a few buttons on a computer terminal. Scoring of correct responses can be done by the machine, which can in turn be stored in such a way as to make the results of an individual student's progress available to the instructor at any time.

Programmed instruction along these lines can serve to further decrease the amount of instructor time expended in teaching and evaluation. It is important, however, to avoid basing course studies upon the use of teaching machines to the extent that the only resultant student achievement is of the intellectual kind, at the expense of growth in other areas. The clinical psychologist can be of assistance in this endeavor in helping the instructor to integrate programmed instruction into the course without sacrificing nonintellectual growth.

The instructor has additional tools at his disposal other than standard printed materials (such as textbooks) and teaching machines. Some of these tools fall under the category of audio-visual aids. One such audio-visual tool used in a variety of ways is television. As is the case with the teaching machine, television can serve as a teacher substitute or as an aid to the instructor in presenting certain concepts.

In the case where the television is used in lieu of traditional instruction, the obvious advantage lies in the fact that more students can be taught by a single professor, unbound by physical conditions. Thus, the course presented in front of a live T.V. camera can reach student groups of varying size and in various locations. These sessions can be taped and presented whenever necessary, meaning that the instructor is not encumbered by time schedules.

While this type of application has its increments, studies nevertheless seem to show that student success is greater in the conventional course setting than it is with the televised instructional method. Although equal, or actually superior in some cases, the T.V. method was reported to be inferior to the conventional method in 20 of 26 controlled experiments examined by Walker and McKeachie (1967).

Utilizing television as an instructional tool per se, the results seem to be more positive. Walker and McKeachie (1967) have listed some of the increments to be gained through using the T.V. in this context as follows:

1. "Through the use of TV, important experiences can be provided for the student in the classroom that would be nearly impossible without TV...a TV camera can be present unobtrusively in circumstances in which a single live observer would either disturb the phenomenon in question or would himself be disturbed by it. For example, a diagnostic interview between a clinical psychologist and a client can be recorded by means of TV tape with an unobtrusive camera present when the presence

of live observers behind a one-way vision screen would disturb the very nature of the interaction. Such material can then be edited and brought into the classroom on demand."

2. "A TV camera can view the ocean deep, the behavior of materials in a cyclotron, the reactions of a man being placed into orbit--situations in which it would not be safe or there would not be space for a human observer. Yet the results can be brought into the classroom."
3. "A TV camera can view minute events and magnify them to visible proportions."
4. "Through tape recording, even ordinary events can be made available at the time of the class meeting rather than at the time they actually occurred, as in the case of foreseeable historical events, or events which can be more conveniently staged on their own schedule." (pp.57-58)

In a study examining the efficiency of the teaching process when integrated with school television broadcasts by Gheorghiv and Cretu (1973), the authors found that where T.V. supplemented regular educational methods, then gains in student achievement, motivation, and performance were noted.

Another audio-visual tool available for use by teachers is the motion picture film. Despite the fact that they have been available to the college instructor for many years, their impact upon higher education has been limited. There are presently many such useful films in a majority of subject areas. Prior to presenting films to the class, the instructor should become acquainted with the manner in which the subject matter is treated, as well as areas which may serve to confuse students. The presentation can then be prefaced with remarks as to what to look for and how it relates to the course curriculum.

In discussing educational films, McKeachie (1974) has listed some principles that have emerged from the body of research on instructional films. Some of these principles are as follows:

1. Students can and do learn from films, at least as well as they can from the less than adequate teacher.
2. While this learning is not confined to details, it may include concepts and attitudes.
3. In cases where a film is less than adequately organized, the teacher's previewing comments or outlines increase learning.
4. More than one viewing of a film can increase learning for less intelligent students.
5. As students view more and more films, they learn more from each new film that they see.
6. In rote association tasks, picture stimuli are more effective than verbal stimuli.
7. Despite the fact that participation facilitates learning, note-taking during a film presentation produces less effective learning (as gauged by the administration of a test) immediately after viewing.

Walker and McKeachie also have speculated as to some of the reasons why instructional films are not more widely used in the higher educational format. One problem incurred is in the making of physical arrangements to show the films. Another factor is that, as I have previously stated, instructor preparation prior to presentation of the film is desireable, and some teachers are loathe to use them for this reason. There is also the added problem of integrating films into the course plan, which requires additional forethought. This can be confounded in the case where one copy of a film is available and many faculty members wish to use it, adding to problems of scheduling. While none of these problems is without solution, the combination has served to limit the use of instructional films in college or university teaching.

Tape recordings have also been used as a teaching tool by some college instructors. Less preparation is required where tape recordings are used, and they can be an inexpensive means of providing concrete auditory experience to students.

I can now proceed to discuss other aspects of teaching methodology which lead to increased teaching effectiveness. As I have stated, to be effective teaching methodology must be based upon sound educational theory. I have already discussed the benefits of active participation over passive participation in learning. There is no doubt that true learning must result in understanding and self-revelation. The learner must be able to expose himself to the instructor and to his classmates so that he may fully realize his own potential. When this self-understanding occurs, positive personality growth is the result. In a way, all discussion and learning that is not to some extent self-revelatory may be considered to be anti-intellectual. Self-expression is the surest path to self-awareness. Without the latter, change is impossible and education an empty and useless ritual. Learning must result in total individual growth and development, and not just in isolated "intellectual" development.

Along these lines, I have advocated the assignment of term projects over term papers as a means of increasing student involvement, and hence, learning (Sternlicht, 1965b).

Other research, such as that by Novak (1958), has shown the project-centered method to be favorable. I have found this to be true, based upon 20 years of experience with this method and upon college students' reactions to the term project assignments (which were inherent in arriving at this conclusion).

The term project which I am describing might be variant with the usual connotations associated with the term. At the onset of the semester, the instructor announces that each student will be required to submit a term project which will be due for presentation two weeks prior to the end of classes. Students are advised to review the various units of study contained in the course syllabus outline, and to chose one area that they feel most interested in becomming involved with. They are to proceed to envision that they are to instruct a class in their area of choice, and to create a visual demonstration model which will most effectively illustrate the principle or principles involved. They should be informed that: (a) the project should be self-explanatory; and (b) it will be demonstrated before the remainder of the class. The students are additionally informed that the grade which they will receive for the project will be based upon two criteria; the nature of the topic which they select, and the means in which they present their demonstration. The instructor, on the other hand, must avoid any subjective considerations of artistic talent or quality of the finished product in grading of the project. The key factor in the presentation is the 3-dimensional visual expression of an abstract verbal concept. The student should receive no further guidance, although the instructor may choose to illustrate the types of projects that previous students have submitted. This is the method that I have employed in teaching the gamut of undergraduate psychology courses, in lieu of the more traditional term paper requirement, with very satisfying results.

I believe that this type of activity not only satisfies the requirement of making students responsible for the securing of their own knowledge, but can be enjoyable for the student as well. The vividness of the resultant first-hand experience of this type of creative activity (and its long-lasting recall) cannot be matched by any written accounts of others.

There are additional reasons that can be cited in advocating the assignment of term projects over term papers. The purpose and meaning of an individual's educational experience is likely to be transmitted through the presentation of a term project.

Term papers are based in large measure upon the assembling of facts. One can envision the role of the student in this endeavor as that of a laborer working for a contractor in the building of a house. The level of interaction, viewed from a clinical standpoint, is somewhat compulsive. Indeed, every detail in the preparation of such a project might be proscribed by the instructor, from which topic to choose, the amount of time to be spent researching, and the exact format to adopt in writing the paper itself. The use of the term project method, however, forces the student to select the materials with which he will work, and to reorganize these materials to meet his own predesigned purposes. Thus, what the student accepts to act upon is what he himself, and not the instructor, has chosen.

In additional support for the adoption of this method, it can be pointed out that many educators have become increasingly skeptical as to whether or not term papers are valuable in proportion to the amounts of time and energy required of both the student and the instructor in their preparation and grading. Indeed, forced to read a slew of such papers at the culmination of the term can put a strain upon the instructor to the degree that subjectivity becomes an increasingly more important factor in grading with each subsequent paper that he must read. Upon employing the term project method, the instructor might very well find that the grading of the term project is less arduous than is the grading of term papers, and he can additionally draw upon the reactions and comments of other students in determining the value of each presentation.

Still in all, as Thistlewaite (1960) has reported, the true value of the term project method should be revealed in the degree of student motivation and resourcefulness that is fostered. I am convinced that with the use of the project method, its superiority over the term paper approach will quickly be evidenced. Perhaps the most convincing evidence for the adoption of the project method comes from students themselves. As I concluded my initial study on the use of term projects over term papers, I should like to quote verbatim a portion of a letter which I received from a student who was in one of my classes where this method was employed, "...to my great surprise, I enjoyed working out my project both in theory and in practice. I even derived enjoyment from working through two tentative ideas to their ultimate abandonment. The opportunity to think through a problem and find a solution proved to be an intriguing and pleasant experience."

In their discussion of the term paper and term project, Walker and McKeachie (1967) present advantages and disadvantages to each method. Regarding the term paper, the authors state that, when presented with this type of assignment, the student essentially has three alternatives: (a) he can borrow one from a friend or purchase a paper or otherwise avoid doing the research and writing; (b) he can find a source or sources from which he can plagiarize, with minimal chance of being caught; or (c) he can actually do the assignment as he is instructed.

When the term project is substituted, Walker and McKeachie state that unless unusual effort is expended, usch reports are often poorly organized and presented and are of little value to other class members. To avoid having this happen, it is suggested that the instructor should ascertain the nature of the presentation in some detail in advance so that he can strive to create a discussion type of climate from which all students will benefit.

As I have previously advocated, and Walker and McKeachie have stated, in some cases the instructor might feel that better results can be obtained by having students work together in small groups in a cooperative format to limit the total amount of presentations, to increase the quality of each, and to desensitize students to fears of working independently. Whichever of these methods is chosen, I maintain that the quality of the educational experience is enhanced through the use of the term project method as against the term paper requirement.

We can now move on to a discussion of other means that can be used to heighten student participation in the learning experience and to encourage students to obtain a first-hand knowledge of the subjects which they are studying. One such means which promotes this type of student learning is through the employment of field trips and field experiences.

The clinical psychologist, by the nature of his profession, is interested in promoting a maximum of harmonious interaction between peoples, and in consequent reduction of any erroneous knowledge of other groups (e.g., the amelioration of prejudicial attitudes). One means employed by the clinician in this endeavor is intergroup contact, where the groups are of equal status. Thus, certain types of field trips and experiences might be extremely profitable.

In the educational format, the same can be said to be true. Prejudices inhibit learning. When an individual erroneously feels that he knows all that there is to be known about a particular subject, naturally, there is no impetus to further investigate the area. In cases where these prejudicial feelings are predicated upon erroneous or inferior knowledge of the subject, the issue is further confounded. Like the clinical psychologist, the instructor can seek to eliminate these prejudicial attitudes on the part of his students through the tangible and concrete field trip or field experience.

Let me digress a moment by saying that most of our undergraduate and graduate students are infused with so-called "middle-class" values and beliefs. Learning would be promoted through the imparting of some phenomenological knowledge of the values and ideals of the lower socioeconomic classes, a knowledge of which can be facilitated through the field experience. In cases where the instructor finds this type of approach impractical, he might decide to invite qualified representatives who are knowledgeable in pertinent areas to speak to the class, or to offer descriptive accounts of the experiences of members of the lower-class, or to incorporate readings into the course outline which would result in heightened student understanding of such group members. Obviously, the possibilities that have been presented are arranged in descending order in regard to their increments. The first, being the most active approach truly involves the student in the learning experience, and is likely to be the most effective means of the three for eliminating prejudicial attitudes. The second method, which involves inviting outside speakers to present their views, although requiring less first-hand participation on the students' part, still actively involves them. The third method, that which involves teacher assignment of outside readings, is the most passive type of approach, yet it is still preferable to the instructional situation in which no attempts are made at changing prejudicial attitudes.

Some might take issue with my inclusion of the field experience in the realm of active involvement expressing the view that the student remains a passive observer but is merely transferring his observations from a classroom setting to that of the field. To those who are of this belief I can present two rebuttals; the first being that upon being presented with the vast amount of stimuli available in the field, when compared to the nature and degree of stimulation in the classroom, the student actively selects those to which he will attend (albeit with instructor guidance) and as such is less passive than while reading a text or listening to a lecture; and the second being that, regardless of the level of activity, most would agree that field visits are indispensable in creating a learning environment that truly involves the learner and results in growth in areas not confined to intellect. Such concrete, all-involving experience makes assimilated information more meaningful to the student and aids in understanding and retention.

Our discussion of the teaching methodology would, of course, be incomplete without adequate treatment of the lecture and the classroom discussion methods. These represent, perhaps, two of the most important tools with which the instructor works, equaled perhaps, but not surpassed, by the importance of the text.

For all its use, the lecture format is often one of the least effective teaching tools available. Often dull and lifeless, promoting passivity on the part of students, ill-organized or ineffectively presented, the lecture is sometimes more of a block to effective learning than it is a learning facilitator. Perhaps this is due, in large part, to an inability of many instructors to analyze the lecturer's role, as well as to formulate a series of goals and objectives for each lecture that are given. Doing so would, no doubt, improve the quality of many lectures and the clinical psychologist, with his fundamental insight into human behavior and interaction, can be of assistance in helping the lecturer to improve the quality of his output. The behaviorist, with his expertise in the field of learning, might also be helpful in this endeavor. Thus, rather than approaching it in a haphazard way, for maximum effectiveness the lecture should be thought out from beginning to end, with a number of considerations in mind. As Walker and McKeachie (1967) have stated, "No matter how hard you try, some lectures will stink. If you do not try very hard, they will all stink."

One limiting factor regarding lecture effectiveness is that it is unreasonable to expect a single lecturer to be so well versed in the various sub-topics in a given course as to be able to devote lecture time to each and every one throughout the course of the term. One solution to this problem, where the lecture format is deemed advisable, is to have various lecturers present subtopics within their own expertise as the course progresses.

Another factor meriting mention is the overreliance upon the lecture technique as a tool by many instructors. As the old saying goes, "Always try to use the right tool for the job." The teacher who attempts to meet a majority of his course goals through the use of the lecture format is likely not aware of the fact that better results might be obtained where a variety of tools are employed. Perhaps the lecture is best used as an overall supplementary means of imparting knowledge to students, reinforcing knowledge, and serving to make facts coherent which have been presented in other ways.

Walker and McKeachie (1967) have included a list of possible increments that can be provided through the use of the lecture format. The three points presented are as follows:

1. "The lecture is a good tool for meeting the goals of presenting the newest developments of the field and communicating the intrinsic interest there is in (the field)..."
2. "The lecture can be a secondary instrument for introducing the full range of subject matter and for providing suitable identification models for the student."
3. "There is no great need to force lectures to communicate elementary concepts, to provide much in the way of factual material, to integrate the course material, to communicate the basic attitudes of the discipline, to provide individual guidance and monitoring, or to develop intellectual skills." (p.15)

Rather than attempt to fully discuss various lecture techniques in regard to factors such as concept formation, human channel capacity, stimulus complexity, etc., suffice it to say that the use of the lecture as a tool requires organization and planning, and the lecturer must take student behaviors into account. In this latter endeavor, the clinical psychologist can contribute to the teacher's understanding and insight, and as such facilitate the development of superior lecture techniques. The reader who is interested in a more thorough discussion of the lecture itself can consult one or more of the available texts on the subject.

As an alternative to the lecture format, many instructors use class discussion as a means of imparting facts between group members, heightening student motivation, and fostering understanding and comprehension of subject material. We have already exemplified the discussion to be valuable in forcing the student to take an active part in his own educational experience.

As is the case with a lecture, the discussion must be planned and guided in order to be maximally effective. While the spontaneity of the process precludes careful preorganization, the instructor should nevertheless formulate a series of objectives which he would like the discussion to meet. The real job for the instructor in employing this method is to make sure that the discussion proceeds along the lines he has set, that it is not dominated by a few students, and that questions which arise as the discussion proceeds are accorded enough class time so that they are clarified, but not so much as to inhibit meeting pre-established goals and objectives.

The discussion can be a valuable evaluation tool, in addition to a means of fostering achievement. It can provide the instructor with information as to group progress, alert him to those concepts which students are finding difficult to grasp, as well as to evidence the way individuals in the class relate to the educational experience. Additionally, the discussion format can provide the instructor with all-important indicators of nonintellectual growth, and hence provide feedback as to the overall quality and effectiveness of his teaching methods. The instructor who is well-versed in the use of the discussion format can steer the discussion in ways that will enable him to use it for the type of assessment that he would like to make.

Not only is the discussion valuable for the reasons which I have cited, but it can be additionally beneficial in bringing subject-related problems to light. The type of critical thinking fostered by the discussion is unequalled by the use of the lecture format or textbook assignments. As is the case with the lecture, the discussion, to be maximally effective, requires a knowledge of human dynamics and interaction which can be fostered through the incorporation of the expertise of the clinical psychologist into the educational program. Discussion methods can be related to group treatment in psychotherapy. The role of the instructor as group leader can be compared to that of the clinical psychologist in group therapy. To maximize student participation, the instructor, as the group leader, should not become too great a focus; similarly, he should not allow himself to be so passive that the discussion becomes circular or that objectives are not met.

As I have stated in a previous section of this text, discussion groups seem to be receiving a fair share of attention in the higher educational milieu. This can be attributed to educators' acceptance of active versus passive participation in the educational experience. The lecture, by its nature, caters to the passive student, while the discussion method promotes, and even requires, student active participation. Considering this, along with the fact that the discussion can aid in student evaluation and assessment, it becomes obvious that there is more future in the use of the discussion format in promoting student growth, both intellectual and otherwise, than perhaps any other single tool available for use by the instructor.

Teachers. In many respects, learning is a two-way street. Indeed, most of the orientation of this text has been centered around educating teachers to improve teaching effectiveness as well as that of educating students. As I have demonstrated in the previous discussion of eliminating student prejudices, the most effective climate for learning is created when an individual is aware of what he does not know and is thus in a position to avail himself of, and commit himself to, the learning experience. The same holds true for the college or university instructor. The teacher who feels that he is operating with maximum effectiveness might not seek additional information or avail himself of new techniques which might enhance his teaching capabilities. In the case of the instructor who is aware of his inadequacies, or at least is cognizant of those teaching areas in which he can stand to improve, there is much to be learned from the teaching experience itself that can help him to become more effective.

One way that the above can be accomplished is through obtaining feedback directly from students, either during, or at the culmination of, the semester. Previous reference has been made to a study by Weaver (1960) in which 699 college students were asked to rate their instructors as to teaching skills and personality traits. As was reported, the findings indicated that students who expected poorer grades in their courses tended to be less discriminating in their ratings than were students who expected to receive A's or B's. Most of the student bias was directed in their criticism toward teaching skills and not toward their ratings of personality variables. This latter fact might be of interest to teachers who are loathe to incorporate such student evaluations into their educational program because they feel that the only outcome of such an endeavor would be to give dissatisfied students a chance to vent their subjective hostility. Weaver's study shows the opposite to be true. Given the chance to air their feelings, students are far more concerned with teaching methods, as they see them, than they are with personality factors.

Another approach to faculty evaluation has been looked at by Fenker (1975). Although the author examined assessment of teachers and administrators, we are concerned with the former, in which approach, clarity, interaction with students as a group and as individuals, enthusiasm, and questioning behavior were specifically looked at. Consideration was given to privacy and to the experimental nature of the evaluation techniques. A factor analysis of results (which were obtained through the use of a questionnaire) was performed. The author's concern was with an evaluation of the assessment process itself, regarding which it was reported that the factor analysis offered a successful means of grouping various criteria and in eliminating redundancy, while a statistical analysis met with only partial success. It is worth noting that each individual's results were kept confidential. Each teacher received the only copy of his or her analysis, with the option to send it to the chairman of their department.

Along these lines, Aleamoni (1976) has proposed a system for rewarding and improving higher educational instructional effectiveness through a process of evaluation of instructor skills, followed by presenting feedback to the teacher, options for him to consider in light of the criticism presented, and methods for implementing same.

Teacher evaluation of students can be handled in a number of ways depending upon the type of information that is being solicited. These evaluations can either be signed by students or handed in anonymously. In cases where the student is asked to sign his name to an evaluation, the instructor should make it clear that information will not be taken into account in arriving at the student's grade.

Some feel that without instructor self-awareness, it is difficult to foster effective teaching. As Jersild (1955) has stated, "To help a pupil have meaningful experiences, a teacher must know the pupil as a person. This means, that the teacher must strive to know himself." Jersild goes on to state that in order to obtain insight into a pupil's problems, the instructor must attempt to face and to deal with his own life's problems. To sympathize with the hostile student, the teacher must face his own hostilities in dealing with pupils and colleagues, as well as with himself. He must have some insight into his own defense mechanisms before he can adequately understand those of his students. Likewise, he must understand his own fears before he can understand those of his pupils. Jersild states that, "A teacher's understanding of others can be only as deep as the wisdom he possesses when he looks inward upon himself. The more genuinely he seeks to face the problems of his own life the more he will be able to realize his kinship with others, whether they are younger or older, like him or unlike him in education, wealth, religion, or professional rank. How does one achieve understanding of self? One broad principle is this: To gain in knowledge of self, one must have the courage to seek it and the humility to accept what one may find. If one has such courage and such humility, one can seek professional help and one can draw on many resources in everyday life." (p.83)

The above is a prime illustration of the main thrust of this text. The educator who is aware of the value of, and is courageous and humble enough to seek, outside consultation is far more likely to find an improvement in his teaching methodology than the instructor who, for one reason or another, chooses not to do so.

One means by which the educator can indirectly seek such help is through the reading of books by authors who have struggled toward self-understanding. This method might be preferable for the instructor who is insecure about availing himself of outside sources of consultation.

Not all teachers are willing to comply with recommendations made by outside consultants. In a study by Frankel (1974), such compliance with a psychologist's recommendations was examined as a function of perceived level of expertise, sex of the examiner, and effort. Results indicated that teachers did not respond differentially on the basis of perceived level of expertise or sex of the tester, but the amount of effort exerted in pursuit of the recommendations made a significant difference in their rate of compliance. It was thus concluded that psychologists should make their recommendations as easy as possible, insofar as those which require a great amount of effort are not likely to be complied with. Frankel further noted that apathy toward psychological services on the part of teachers is perhaps the greatest impediment toward effective consultation.

A more direct way of accomplishing self-understanding can be through sensitivity training. Sensitivity training has been applied to both students and teachers. A discussion on its application with the former will be held for a later section.

In its application with teachers, the goal of sensitivity training is less oriented around teacher self-understanding than it is with their understanding of their students. A good illustration of this type of application is available in a study by Joyce, Geir, and Hunt (1969), in which sensitivity training for teachers was examined and evaluated. This study attempted to increase the sensitivity of teachers to the frame of reference of the learner. Teachers' communication styles were studied both under simulated and actual classroom conditions. The authors defined sensitivity training as "...the recognition of the learner's frame of reference and a subsequent adjustment of teaching behavior in an attempt to accommodate the learner's stance."

A three-step approach was adopted: (a) to acquaint teachers with how to observe and understand cues given by the learner; (b) to teach the instructor to alter his approach during a given class in light of emerging frames of reference of his students; and (c) to reflect the preceding in the teaching methodology by asking more probing questions designed to better indicate the learner's frame of reference.

Joyce, et. al. (1969) employed a two-stage sensitivity training program. The first phase was made up of discrimination training, in which the trainees were taught how to identify and interpret cues from learners. The second phase included actual role playing in both providing practice and feedback for the trainees.

The program was found to have few of the expected direct effects upon sensitivity, but it did affect the ability of the trainees to establish rapport with their students. While actual classroom teaching was not observably affected, it was thought to influence certain behaviors in positive, although indirect, ways. As a sidelight, the authors determined that the simulated teaching environment is effective and close enough to the real classroom situation so as to be useful in initiating and evaluating the effects of training programs for teachers.

In a related study by Tolela (1968), sensitivity training was found to produce behavioral change in trainees which could then be transferred to situations outside of the training milieu. In a study performed by Childers (1974), an attempt to quantify the effectiveness of a human relations training model using in-class student observation and interaction analysis was undertaken. Although all results were not all statistically significant, most showed that such a training model does produce positive changes in teacher behavior.

(Sensitivity training has also been employed with prospective school administrators. In one such experiment by Moracco and Bushwar (1976), the effect of human relations training on the dogmatic attitudes of educational administration students was examined whereupon it was determined that such training is effective in decreasing dogmatism among such individuals and should be an integral part of their training.)

There are other means which can be useful in helping the instructor attain a level of self-awareness as well as an understanding of his students. One such means, which I bring up with some trepidation, is that in which the clinical psychologist becomes directly involved with the teacher, not in the consultant role often alluded to in this text, but in the more usual guise of psychotherapist. In some instances, infrequent as they may be, a professor is not operating at his maximal effectiveness due to some emotional problems or tensions. The clinician could be of great assistance in a situation such as this in helping the educator to arrive at a resolution of his difficulties, and thereby freeing his creative capabilities. The solution might even require that the professor take a semester off, so that his personal problems receive the adequate attention necessary to resolve them without his teaching effectiveness suffering.

While such intervention might benefit those of any profession, it is perhaps more important that the teacher not be burdened with personal problems, insofar as he is responsible, in part, for the education of numerous individuals whose lives he actually directly influences. Preponderant emotional disturbances limit the teacher not only in his effectiveness in imparting his expertise, but also in other significant classroom behaviors, such as the establishment of rapport with students and the ability to objectively assign grades. The determination that such help is needed must, of course, come from the professor himself. The concerned instructor should make every attempt not to let his private life influence his classroom behavior and, in cases where this is not possible, he should make a concerted effort to ameliorate his personal problems as much as possible.

Thus, it can be seen that teachers have as much opportunity to learn from the instructional situation as do students. As is the case with the student, the instructor who is aware of the value of being open and receptive is likely to benefit most from the learning experience. The humility, courage, open-mindedness, and enthusiasm generated by the instructor who is always striving to improve his teaching effectiveness is likely to rub off on his students, creating a truly productive climate for learning.

In bringing this section to a close it might be useful to cite the research of Adelson (1961), who, in discussing the characteristics of teachers, states that at least a portion of the educational process can involve the conscious or unconscious modeling of the student's behavior after those of his teacher. An examination of his role as teacher can help to eliminate those behaviors which are undesirable, while at the same time most fully capitalizing upon those which are maximally productive. Along similar lines, an investigation by Firth (1974) into the effectiveness of an in-service training program on teacher attitudes was initiated in which it was hypothesized that teachers who participated in the workshop would become more open, more student-centered, and would recognize the importance of affection between student and teacher. Using 161 classroom teachers as subjects, a 30-hour course in training in the theory and practice of the Bessell-Palomares Human Developmental Program was introduced, which covered the themes of Awareness, Mastery, and Social Interaction. In the final phase of the program, the trainees were allowed to practice the techniques of the program while under supervision. Findings showed that the subjects increased in openness, student-centeredness, and teacher-student affection. The author concluded by stating that inservice training can increase the general openness, etc., of some groups of teachers; however, the initial level of openness of the group does affect the efficacy of the training.

We can now further examine the interactive educational process and how it can be capitalized upon to provide a more effective learning situation.

One means often employed to establish empathy, heighten student involvement, and generally facilitate the interactive process is role playing and psychodrama. Here the professor can assign one student to portray the professor, and another to play-act a student who is seeing the professor in an attempt to understand why he (the student) is having such difficulty in grasping the subject matter, and the two students extemporaneously act out the situation. Upon completion, the professor may then ask the class to discuss points that the role-players may have overlooked. Thus, even those students who were not actively involved in the role-playing situation have a chance to do more than just sit back and adopt a totally passive posture.

Another method that can be employed in the classroom to facilitate student understanding of the role of teacher, as well as to aid in student understanding of each other while making academic progress, is the application of group dynamics. Similar to psychodrama in obtaining its principles directly from clinical psychology, group methods, as studied by Friedman and Zinberg (1964), can be useful in projecting the real and perceived role of the teacher as well as dynamics of transference which can help the student attain non-intellectual as well as academic growth.

A third method which has been used to facilitate student growth, involvement, and interaction is the introduction of games with simulated environments. Boocock (1967) has investigated the effect of these games upon student learning as an alternative to the more rigid and non-functional reward system which the author feels comprises too much of the traditional educational format. Data from studies analyzing seven different games showed that effects included inducements to student motivation, vicarious experience, intellectual learning, and positive changes in student attitude. Others, such as Slote (1974), have advocated the incorporation of principles of Transactional Analysis into classroom methodology to facilitate a better understanding of some crucial educational areas. The author maintains that it is essential to avoid "scripting" students, i.e., forcing them to make life-decisions which are not really their own, nor in their best interest. Additionally, Slote has included a description of games which students play in the classroom that are counterproductive to educational progress and growth, how such games are started, and how they can be eliminated.

Teamwork to facilitate interaction has been attempted and studied by Smith (1955), in an early investigation of alternatives to the traditional higher educational lecture format. Results of this study, though varied, indicated prospects for further study. While the author found no difference in overall satisfaction in the teamwork group, when compared to the lecture group, he found that the former achieved more than the latter. Additionally, it was shown that team students who evidenced moderate attitudes toward team participation achieved the most, and that team students with low anxiety and high initial achievement scores were less satisfied than those with high anxiety and low achievement. While some of these results are difficult to interpret, the higher achievement in the teamwork group, probably due to heightened student participation, seemed to demonstrate that teamwork is preferable to the more passive lecture format.

In a related study by Shulman (1974) on group work skill and effective college instruction, it was hypothesized that a college class with a high level of group work would lead to the ability to more positively evaluate course effectiveness, more positively evaluate instructor effectiveness, have a more positive attitude toward the subject area, invest more time in independent study of the subject area, and rate the course experience as more enjoyable when compared with students in classes with less group work. Although the hypotheses were not held to be true from a statistical standpoint, certain of these factors were found to be in the expected areas while it is felt that faulty design impeded the attainment of more statistically valid results.

As group psychological techniques become more refined, as they have in the years since the study by Smith (1955) was performed, it can be expected that such interactive methods will become further integrated into the higher educational format. Insofar as interaction, be it one-to-one or in groups, is a major part of the clinical psychologist's domain, I would go so far as to say that even upon considering all of the areas in which I have proposed that the clinician become involved, there is perhaps no single area in which his expertise can be more valuable in the higher educational format than in helping the educator to understand the importance of, and to capitalize fully upon, interactive processes.

Regarding the group experience specifically, the clinician might best introduce the educator to the understanding of group dynamics and techniques of group direction by leading a class T-group, with the professor as an observer on one or two occasions at the beginning of a semester. In lieu of this approach, which might be threatening to some college professors, the clinician might recommend some books on the subject which can acquaint the educator with principles of group dynamics.

The group methods, as described, resemble or draw in part from sensitivity methods which I have already discussed, at least in terms of their application to teacher training. As I stated then, such methods have been applied to student populations in the attempt to foster maximal learning and growth.

An extensive study was performed by Culbert and Culbert (1967) mobilizing potential. Perhaps the effect of sensitivity training upon students is best summed up by the authors' following statement: "...we see the T-group as providing two major types of learning which enable students to make more productive use of their resources. On one hand the students gain conceptual learnings: how they perceive others, how others perceive them, how they enter into a group, how their styles are different from the styles of others, how the consequences of these differential styles affect the group. Learnings about stereotypes, authority struggles, and sexual identities are common to these conceptual learnings. A second, and perhaps more important, type of learning that takes place is the knowledge and experience students gain about the interpersonal, here-and-how processes in which conceptual learnings are generated. The understanding that students receive for the processes that facilitate learning and growth in the group is of key importance, since the processes are readily transferable to other personal and academic encounters." (p.16)

Previous mention has been made of the importance of changing student stereotypes as a means of removing blocks toward learning and growth. Culbert and Culbert report in this regard that there is indeed a tendency for college and university students to polarize into subgroups along political and social lines. Since traditional college classes are too large to effectively facilitate student interaction, students usually tend to associate with each other along homogeneous bases. According to Culbert and Culbert, this supports the existence of stereotyping. The sensitivity group can help to force interaction among members of various subgroups, and hence break down prejudicial barriers.

The T-group, as reported by Culbert and Culbert (1967), can center around students' relationships with authority figures. The authors note this as being exceptionally important in light of recent campus-incurred attitudes which question the values of the so-called "establishment" and other individuals of power and authority. It is felt that these struggles place a burden on the student and inhibit the formulation of creative or effective alternatives to the structure as it presently stands. The outcome of student rebellion seems to be conciliatory agreement on the part of administration rather than true productive change. Such struggles often leave the student frustrated and less motivated to achieve in the higher educational setting. Some go so far as to drop out of the institution altogether rather than compromise their ideals. The T-group also can assist the student to get to the source of his dissatisfaction and to formulate a set of constructive alternatives for changing the system, as well as a means of working within it.

In other instances, student reaction to authority might have nothing to do with the establishment (e.g., the college administration), but might arise instead as a reaction to the instructor. The heightened understanding of authority structures that can be facilitated through group interaction and discussion can likewise help the student and the professor arrive at a better understanding of their reactions to one another.

Another area, not directly related to academics, but one which affects student academic pursuits, is students' struggles with their sexual identity. Culbert and Culbert report that the T-group can facilitate students' understanding of their sexual identities, a source of great frustration for many college or university students. The authors state that "As areas of sexual identity are clarified, and as the individual finds more confirmation of himself, there is a reduction of fear and anxiety and thus a release of human potential."

Culbert and Culbert (1967) also show support for the term project method as a means of adapting some of the principles of group interaction to the academic learning situation. They propose a method similar to that which I have previously discussed, of involving different class groups in devising a final term project for presentation to the rest of the class. The proposal that the authors present additionally calls upon each group to construct a final examination in their chosen area. A single grade is given for each project based upon the overall quality of the presentation and the examination. Each group additionally must divide a number of grade points among individual members on the basis of their contributions to the effort. Thus, interaction is facilitated at every level.

Along these lines, McClintock and Sonquist (1976) have looked at cooperative task-oriented groups in the college classroom as a means of lessening the impersonal qualities of large college classes. Students were divided into experimental and control groups, with the former working on assignments in groups while the latter worked individually. Results indicated that students working within the group format did better on their final examination and handed in term papers of higher quality than did those students who worked individually. Additionally, a large number of students, both in the experimental and control groups, expressed the opinion that they thought the group method to be preferable.

Incorporating sensitivity training into the higher educational experience can have some negative effects, however. Perhaps the foremost of these arises from students who have been exposed to such training in one or a few of their courses and who are unable to apply learned principles to other classes where the professor has no such orientation. Without continuous integration of these principles, students soon revert back to their old frames of reference and behaviors. It is hoped by those who support the application of these techniques in college or university teaching that, as increments of this type of approach become more generally recognized by educators, more professors will integrate such methods into their classroom teaching and consequently students will have less difficulty applying these principles from one class to another. As Culbert and Culbert (1967) have stated, "...we are beginning to see...that while experience-based learning processes generate personal growth, transferability is not automatic within the educational framework. The processes need to be stimulated and supported, whether it be by other students or other faculty. In a large multi-curricula university...the possibility of continuity through student learning teams is remote and often limiting. Some system involvement seems indicated for the continuous mobilization of potential." (p.29)

Another study examining the effects of sensitivity training on undergraduate students was performed by Friedman (1970). Two experimental groups were formed; one which received 5 weeks of sensitivity training, and another in which individuals received 13 weeks of such training, along with a third, (control) group, in which individuals were merely given 13 weeks of regular class instruction. The Sixteen Personality Factor Test and the Barrett-Lennard Relationship Inventory were employed to assess changes within and between groups. Although results of this study showed no significant personality change, as measured by the Sixteen Factor Personality Test, between the three groups, some individuals were perceived as changed to some degree as evidenced by the Barrett-Lennard results. Additionally, perceptual change was greater for the group which received the 13 weeks of sensitivity training than it was for the group which received 5 weeks of such training and the control group. Thus, while results were not entirely conclusive, it seems that sensitivity training appears to somewhat change the perceptions of some individuals in the group dependent upon the length of time in which individuals have been exposed to such training.

Another study which compared the group and the traditional lecture method in producing attitudinal changes in students was performed by Flannigan (1970). Using the California Psychological Inventory as a means of assessing changes, Flannigan found that although certain scales evidenced differences between the experimental and control groups, there was no overall significant change between the lecture and discussion sections.

Others have tried different approaches in obtaining changes in student feelings and perceptions, although such attempts have not always been successful. As an example of this, we can consider a study by O'Neil (1974) in which the effect of peer group counselling upon academic performance, self satisfaction, personal worth, social interaction , and self-esteem of low achieving female college freshmen was investigated. Forty-eight subjects were divided into two groups, one of which received counseling while the other did not. While it was expected that differences between groups would exist in grade point average and other personality factors such as self-esteem, personal worth, social interaction, and self-satisfaction, no such differences were found.

Student-instructor interaction has been analyzed from a number of standpoints. Some studies, such as the one by Cummins (1971), have examined such interaction between teacher and pupil in the classroom situation pointing up some interesting results. In examining the structured and unstructured classrooms, Cummins contends that the latter actually does not exist. Looked at from a behavioral standpoint, the author shows that structure obviates choice of behavior, that behavior is a function of perception, and that teaching requires transpersonal relationships. Structure is created to obviate behavior in a given set of circumstances and, as such, facilitates behavioral control. Additionally, behavior is anticipated differently in a lecture hall than it is in a laboratory. Cummins narrates that "Effective teaching demands transpersonal relationships; interpersonal are not adequate...The traditional teacher endeavors to immure the students in a two-by-four structure, enclosing their bodies within the four walls of the classroom and imprisoning their minds within testbooks, workbooks, tests, outlines, reading lists, and syllabi. These media bring the student into relationship with the teacher and thereby structure the class. It is suggested here that these structural elements, like walls, all too frequently intervene between teacher and student, who focus on them rather than on one another, forming an interpersonal rather than a transpersonal relationship." (p.292)

Cummins (1971) goes on to state that the resources of the traditional classroom such as textbooks, traditional examinations, and the like, have an influence on the developing structure to the point of limiting student behaviors so that they fall within the rigid guidelines proscribed by the instructor. He continues that classrooms which rely too heavily on these methods obviate student and teacher behaviors to such a degree that the main concern is covering the material according to schedule. Not only is academic progress limited in this way, but assessment procedures are likewise unduly influenced.

The alternative that Cummins offers is loosely referred to as unstructured. What he is actually referring to is the implicit structure generated in meeting the mutual expectations of both student and teacher. It is for the teacher to see that these expectations are along coincidental lines, in that effective rapport, an important facilitator of effective learning, cannot be established without such consideration.

This type of flexible classroom structure, with mutually defined goals, facilitates the selection of resources and activities that intensify the educational experience and , resembling the democratic process, fall well in line with the previously discussed two-way learning concept in which teachers learn from students as well as vice versa. While the author states that the efficacy of using this approach is dependent upon the competence of the instructor, it is similarly dependent upon the way in which the professor views the competence of his students. Cummins suggests that there is an inverse relationship between the degree to which the instructor prestructures the classroom situation and his degree of optimism concerning the capabilities of the student group. When the teacher feels that his students are incapable of functioning in an unstructured environment he is constrained to substitute a more rigid structure. Cummins states that "Fluid structure teaching does not eschew content nor depreciate subject matter; rather, it attempts to lend them cogency and relevance born of interest, spontaneity, serendipity, and suspense. It defines the function of content as that of bringing together the teacher and the student at a point of departure for its interpretation, modification, rejection, extension, qualification, all of which fuel the processes of change within the teacher and student--the process of learning." (p.293) He goes on to conclude that fluid teaching requires heightened expertise, imagination, and insight in evidencing the continuing capability of generating, rekindling, extending, and intensifying interests on the students' behalf. Operating on a more extemporaneous basis, the instructor must have a sufficiently adequate knowledge of his subject so that he can answer the problems that the fluid structure might cause to come to light insofar as the process itself precludes anticipation of each and every question or problem.

In a study performed by Hatch (1974), the importance of experiencing democratic classroom environments was highlighted in teaching students to function in society. This study confirmed that teachers in a training program in empathic responsiveness and democratic decision making were more acceptant of student ideas and feelings than were those teahcers who did not take part in the training. It was additionally found that the former group initiated significantly more talk in the classroom than did the latter one.

Along similar lines, a study performed by Haines and McKeachie (1967) focused on discussion groups (which I have discussed in an earlier section as facilitating interaction and hence, learning) in comparing cooperative versus competitive discussion methods in teaching a course in introductory psychology. The authors looked at the comparative discussion methods in teaching a course in introductory psychology. The authors looked at the comparative amount of tension produced by each technique, as well as the effect of each method upon student performance and satisfaction. The hypotheses, as presented, were: (a) that a higher level of group tension would be found under competitive conditions; (b) that the higher tension group would evidence a disruption of performance; (c) that unreduced tension associated by tasks begun by one individual and completed by another would be greater under competitive conditions and that (d) the unpleasantness of the higher tension found in the competitive group would result in member preference for, and satisfaction with, cooperative over competitive conditions in the classroom. Eighty-two undergraduate students in four sections of introductory were used as an experimental population. Varied conditions of cooperation or competitiveness were produced through the implementation of differing teaching techniques. As was stated, the dependent variables were the assessment of progress, tension, and satisfaction. The results supported the four hypotheses. Students in the competitive groups consistently evidenced greater incidence of self-oriented need and less satisfaction as well as heightened tension and anxiety.

Some investigators, such as Patrick (1974), have attempted to relate selected teacher personality factors to verbal interaction behavior. Fifty student teachers were administered the 16 Personality Factor Questionnaire. A field study was conducted to determine the amount of interaction each of these teachers had with their pupils. Based upon the data collected it was found that those teachers who spent a significant amount of time in classroom interaction were labeled as "conscie-tious" on the personality scale. Those who were found to spend a significant amount of time giving directions were identified as "outgoing," "conscientious," "venturesome," and "controlled," while those who spent a significantly less amount of time in giving directions scored highly on personality factors such as "suspicious," and "self-sufficient." The teacher who was labeled as "controlled" was critical a significant amount of the time, while the "apprehensive" teacher had more student talk responses in the classroom. Those who were rated as more "intelligent" accepted feelings of the students for a significantly less amount of the interaction time, while the "tender-minded" student teacher was significantly less silent or confused in his observed classroom experience.

The importance of student discussion and student-instructor interaction has long been recognized. In a study by Jacob (1958), the author comments that "Some students have a set of mind so rigid, an outlook on human relations so stereotyped, and a reliance on authority so compulsive that they are incapable of understanding, much less accepting, new ideas. Such students quail in the presence of conflict and uncertainty. They crave 'right answers', recoil from creative discussion." Jacob goes on to conclude that, "The values of some students do change in college. But even with these, the impetus to change does not come primarily from the formal educational process. It comes from the distinctive climate..., the individual and personal magnetism of a sensitive teacher with strong values, or the value-laden personal experiences which students occasionally undergo during college.

In short, college can contribute to the growth of a student's values only when it penetrates the core of his life and confronts him with fresh and often disturbing implications, which are different from those which he and his society have taken for granted. This can hardly occur as a by-product of a curricular assembly line. It requires a highly personal relationship between the college community and the individual student--a relationship that is warm and considerate but at the same time mutually aggravating." (p.38)

Almost 20 years have elapsed since Jacob made the preceding statements and while it is true that a larger number of institutions of higher learning have incorporated this type of thinking into their educational framework, with the rise in the number of college admissions over this same 20-year period some feel that colleges and universities have become more of a "curricular assembly line" than ever before. Thus, despite the fact that many educators have recognized the need to revamp the higher educational experience, making it more of a growth process and less of an academically oriented assembly line, there has been the ever-present quandry as to how to accomplish this in light of increasing admission. Here again we have a case where the expertise of others, such as the clinical psychologist, whose orientation towards human behavior and interaction puts him in a position to help the professor organize the classroom experience in a way that falls into line with the educational dynamics discussed by Jacob (1958), is fully warranted. This is supported by others, such as Macleod (1971), who states "Teaching is an exercise in applied psychology, and the psychologist who fails does so either because he does not know his subject or because he has not grasped the relation between psychological principles and teaching practices." (p.248) Although Macleod is addressing his remarks to the teacher of psychology, it can be seen that the same principles hold true in the teaching of any subject, with the psychologist being called upon to contribute his expertise in student-teacher behavior and interaction.

Specifically regarding the use of consultants, Sarason and others (1966) have stated that teachers lack adequate preparation in this endeavor, just as mental health workers lack preparation for dealing with classroom problems. The authors claim that teachers need help in the management of their students as well as in changing their perception of classroom problems and venting their own feelings. The authors set up an in-school psychoeducational clinic to help teachers to make better use of psychological principles in the classroom.

Along similar lines, Chaplan (1966) suggested that a mental health professional be called upon to prepare teachers for dealing with practical classroom problems through a combination lecture-discussion format. In applying this method the author found it to be successful in helping teachers to better deal with their problems. Mariner and others (1961) reported that a majority of school personnel thought group psychiatric consultation to be beneficial, meaningful, and stimulating, while Newman (1965) found that outside psychological services could help education personnel to eventually offer their own expertise in creating a proper classroom program and an effective learning environment. Lawrence, Spanier, and Dubowy (1962) went so far as to state that school consultation is a prime function of community mental health programs. Further support for the implementation of an active consultation program can be found in a summary article on innovations in school mental health programs by Morse, Finger, and Gilmore (1968).

Before completing this section, I would like to refer back to a study discussed in an earlier section of this text, on student-led discussion groups, by Webb and Grib (1967). In my initial discussion of this study I reported that the authors had found this method to be greatly successful in increasing student participation and motivation, and hence, learning. In regard to the present discussion of student-teacher interaction, the authors found that there were changes in both the roles of the teacher and the student as a result of the authors' experimental methodology. They found that instructors who participated in the study were greatly impressed by their students' independent studying ability. In listening to class discussion, instructors became increasingly aware of their students' varied interpretations of lecture material, which brought about concern over their effectiveness in communication. This led to a redefinition of role for many of these educators, which redefinition entailed becoming more attuned to the needs of their students, developing an increased awareness of student modes of thinking, and a better recognition of student problems. As the professor adjusted his teaching methods in light of these discussions, his role came to be more interactive. Those who continued to use the lecture as a prime tool adapted their methods to better suit the needs of their students. In general, teachers who participated in the experiment became less directive in their teaching approach and were more content to let their students actively participate in the learning process. As methods were changed, student motivation was heightened, which further reinforced these changes. Additionally, the change in teacher attitudes was evidenced outside of the classroom as well, in increased inter-instructor interaction revolving around discussions of teaching methodology and student-teacher interaction.

As I have previously reported, the main change evidenced in students who participated in the Webb and Grib (1967) study was one of increased active participation. However, accompanying this all-important change was a difference in student expectations regarding the course. Instead of sitting back and seeking correct answers, students became more demanding concerning the relevance of the material they were learning. As did the instructors, the students themselves developed an increasing awareness of the competence of their fellow students, as well as a heightened regard for opinions which varied from their own. Students who had been previously reticent to participate in class discussions grew to do so at a much greater frequency.

The process of discussing problems and questions additionally helped students to assess their own academic progress as well as to become more aware of these areas in which they were weak. This caused many students to alter their study methods from mere retention to actual understanding.

Taking both instructor and student role changes into account, the authors state that the entire mood of the campus, although not scientifically assessable, was changed for the better in terms of heightened student self-reliance and independent, intellectual thought. Thus, the importance of student interaction cannot be overemphasized in its contribution to creating a truly effective climate for intellectual learning as well as in student growth in nonintellectual areas. As has already been stated, the analysis and adjustment of teaching methods is in many cases a monumental task, affected by limitations of instructor time and expertise. It is for this reason, as well as those others which I have mentioned previously, that the college level instructor should avail himself of outside sources of consultation, of which the clinical psychologist is a prime example.

The Problem of Creativity

Creative teaching, heretofore undiscussed, is of prime importance in creating an effective learning environment. Several studies have been performed which investigate this vital part of the learning experience and which offer a number of recommendations for helping teachers to foster creative thinking among their students. In this section I will discuss the importance of creativity both in teaching and in learning, and I will present some of those studies which deal specifically with teaching at the undergraduate or graduate level.

Research has shown that creativity can be taught, or at least facilitated, via the implementation of certain teaching methods. On the other hand, certain teaching methods don't encourage creativity; they inhibit it. Hallman (1967) has examined the literature in this regard and he has enumerated some of the factors which inhibit creativity. One such factor is the pressure to conform. Taking the form of instructor-chosen goals and activities to reach them, as well as standardized routines and tests and a generally inflexible curriculum, this pressure to conform not only fails to encourage creativity but in many cases negatively reinforces it.

Authoritarianism, both in attitudes and environments, also represses students' creative potential. This type of teacher role forces students to accept what others have previously discovered, what has been organized by others and believed by others, with no attempt to ask students to reach their own conclusions. Authoritarianism turns students into sponges, asking that they retain a certain degree of input until the end of the term, at which time a final assessment of the amount of knowledge retained can be made. These methods not only fail to encourage students to use the knowledge they gain in a creative way, but as a result also limit student comprehension of straight factual information. Thus, the authoritarian method does precious little to enhance student learning while it definitely does inhibit creativity.

A third inhibitor to creativity is ridicule, which undermines students' self-concept and as such blocks creative efforts. Related to authoritarianism, the fear of ridicule, or for that matter any instructor attitude that causes the arousal of student fear, can serve to dissipate creative tendencies.

A fourth inhibitor, described by Hallman (1967), is rigidity of personality, in the form of traits which affect student-instructor interaction. Traits such as compulsive instructor fears or inflexible defense mechanisms can affect the quality of such interaction, and as such tend to stifle student creative behaviors. I have previously discussed the case of the instructor who is not operating at maximal effectiveness because of emotional problems. As I declared then, it would be beneficial for such a professor to seek outside help, such as that of the clinical psychologist, in ameliorating these problems and hence, increasing teaching effectiveness.

Overemphasis upon grades also can inhibit creativity by overly arousing student defenses. Hallman speculates that all overt forms of evaluation might tend to stifle creativity, although some methods evidence more of this than others. Creativity can also be stifled by an overdependence on exact certainty. This also can be related to authoritarianism, in that it involves instructor insistence that things be done exactly as he (the instructor) wants them to be done. Making guidelines too rigid and insisting on certainty discourages students from going out on a limb and approaching the problem in their own unique fashion. Instead, such students follow guidelines much as a builder follows a blueprint, neither seeking nor incorporating other information even when it is available. Obviously, this is neither a very creative way of either seeking nor of applying knowledge. This insistence upon certainty can carry over into other classes and create an overdependent student who insists upon being told exactly what to do, as well as demanding feedback as to whether each step that he takes is correct.

Another factor which can serve to inhibit growth, and consequently to stifle creativity, is an overemphasis on success in long-range or material goals which can serve to preoccupy the student to the extent that little attention is given to other valuable goals which might not be directly related to the above objectives, but which facilitates growth and creativity. Still another creativity inhibitor results from an intolerance or hostility toward divergent personalities. I have previously discussed some of the consequences of prejudicial attitudes, one of which can be the inhibition of creative tendencies.

Hallman (1967) feels that in order to foster creativity among students the instructor must adopt techniques of creative teaching. The author states that "The effective teacher must invent his own creative techniques as a part of the specific, on-going teaching operations in the classroom. The procedures which he invents will appear in the given situation as having been unforeseeable and unexpected. Because they come to him, and to the pupils, as a surprise, their effectiveness will be enhanced. It remains to be investigated whether the principles of creative teaching are identical with the principles of all good teaching. There certainly will be overlapping for the simple reason that good teaching is creative teaching." (p.327)

Creative teaching, according to Hallman, entails providing self-initiated learning (which I have previously mentioned as being essential). The professor can set up a nonauthoritarian learning environment in order to facilitate creativity among his students, and he can encourage his students to overlearn, knowing that when students are saturated with information, imagery, and meanings they are in a better position to become detached to the degree that materials are easily restructured, which in turn is indicative of creativity.

Additionally, creative teaching entails encouraging creativity among students. This involves allowing the student to go out on a limb and look for hidden relationships, to speculate and draw his own conclusions (even at the risk of being incorrect), and other activities indicative of student creativity. The truly creative teacher not only allows for these types of behaviors in his students, but he also encourages and reinforces them. He defers judgement by not predicting outcomes in advance, which can serve as a block to student exploration, and he does not overly stress errors, which can only serve to demoralize students. Instead, the creative teacher promotes intellectual flexibility among his students. He directs them to shift their points of observation and ignore their preconceptions, as well as to look for new meanings in familiar concepts and old meanings in new ones.

Regarding assessment, Hallman (1967) states that the creative teacher encourages the self-evaluation of students' academic progress and achievement, while rejecting standardized tests and group norms as being stifling to creativity. It is the author's contention that self-activity and self-responsibility in learning must be accompanied by student self-evaluation insofar as they both relate to self-concept, an important component of student growth. Hallman contends that the quality of a student's creative efforts is directly related to the student's own estimation of same. Thus, the student with a low self-concept is likely to evidence a lower degree of quality in his creative efforts than does the student who is not "down on himself."

Related to the preceding, the creative teacher tries to instill a sense of sensitivity in his students, both to people and to other external stimuli, regardless of their apparent relevance to academics. Justification for this type of approach has already been presented in a previous section of this text. Sensitivity is related to growth, an all important index of true learning and as such should be encouraged on all levels, academic and otherwise. Additionally, the creative teacher knows how to make effective use of questioning. Questions should be open-ended and operational, and they should not be of such a nature that they call for the rote verbalization of a predetermined answer but should instead foster curiosity and hence stimulate creativity.

Thus, we can see that the creative teacher does not have to consciously think along strict guidelines in order to stimulate creativity among his students. What I am getting at is that creative teaching is more of an unconscious way of looking at teaching, in which the instructor habitually incorporates the processes enumerated in the preceding discussion into his or her classroom practices. As I have shown, sensitivity training can be useful in getting teachers to think along these lines.

An interesting study regarding student creativity was performed by Sadler (1974), in which the hypothesis was adopted that if a person is expected to be creative he will act in accordance with this expectation. Basically, a design was implemented in which one group (experimental) was bogusly informed that they were highly creative while a control group of subjects was not. In comparing the performance of both groups on a problem-solving task, it was found that while the results were not significantly different, differences between groups were in the expected direction.

Toshay (1970), in discussing the creative process, has listed three major aspects of creativity that have been pinpointed through research: openness, focusing, and closure. Openness refers to receptivity toward new experiences. This entails the ability to look at data in an open, unstructured way, which Carl Rogers has described as the opposite of defensiveness. Additionally, there is a need to abandon preconceived notions about things related to the learning experience (as I have previously discussed in detail), as well as a need to be willing to expose oneself to the threat of non-rote learning. Since so much of traditional education methods rely on imitative behaviors, the student must be reconditioned to develop the sort of open-mindedness that is being advocated.

Focus is needed to mediate openness. Basically, it is the ability to alternately use openness to gather information and then focus upon those incoming stimuli in an ordered fashion, so that maximum use is made of the information, at which time the shift is again made to openness for further information gathering.

Closure relates to the process of finishing one's work. Oftentimes, when creative learning methods are attempted it is difficult to know when one reaches the end of one's task, insofar as the receptivity and creative process in general tends to make the learning process a continuous one and so long as investigations are made the student will continue to learn. The instructor must instill a sense within his students that will enable them to arrive at the subjective judgement that their work has been carried to a logical and, dependent upon proscribed goals, and more importantly upon the student's own satisfaction that these goals have been adequately met.

Not all educators are aware of the importance of encouraging creativity in their students. As Ray (1974) has reported, teachers whose educational attitudes can be labeled progressive are more apt to recognize the importance of, and to encourage, creativity in their students than are teachers whose educational approach leans more to the traditional.

In discussing creative teaching, Wenzel (1970) has offered the following conclusions: (a) to label any one particular teaching methodology "creative" is to oversimplify the creative process; (b) creativity manifests itself in different ways in different people; and (c) creativity should be developed wherever and however it is found. The author also relates creativity to the capacity to feel and care about the teaching process, the needs of students, and the teacher's feelings about himself. This again relates to the process of sensitivity training as a facilitator of creativity. The distinction is drawn between liking and caring. While liking and enjoying one's students is advantageous, Wenzel feels that the main integrants of actual caring are appreciating students, respecting them, and responding to them. These "caring" dynamics facilitate creativity among class members.

Another study by Burkart (1974) concluded that the use of specific strategies for promoting divergent thinking among prospective teachers is an effective way to improve such abilities, and that there need not be a special course in fostering creative teaching, but rather this should be reflected in all aspects of the regular teacher training program. Further, that it is easier to promote the different thinking abilities of fluency, flexibility, and elaboration than it is to foster original and creative thinking.

In an attempt to foster creative thinking among teachers, Compton (1968) employed the use of group methods. Creativity was measured in the experimental and control populations through the administration of the Guilford creativity tests. The experimental group used brainstorming, a problem solving approach that makes use of uninhibited group discussion, while the control group simply followed a round-table discussion format. After six weeks of semi-weekly meetings the author reached the conclusions that brainstorming can increase creative thinking ability, and that once creativity has been developed it tends to increase further as time progresses.

Brainstorming has been extensively studied by Lindgren and Lindgren (1965a, 1965b) as a facilitator of creativity in the classroom. Group brainstorming was originally developed by Osborn (1957). This is a technique of group discussion which entails allowing any group member to contribute to the discussion without fear of criticism. Group members are encouraged to build upon each other's thoughts and ideas. Osborn (1957) maintains that such group techniques help an individual produce twice as many ideas as he could produce working independently. Other, such as Dunnette, Campbell, and Jaastad (1963) and Taylor, Berry, and Block (1957), have found that brainstorming alone produces more ideas than brainstorming in groups. Lindgren and Lindgren (1965a) attempted to ascertain whether productivity in individual brainstorming sessions will increase, when these sessions follow group brainstorming sessions. Subjects for this study consisted of 167 undergraduate students at San Francisco State College. The students were requested to write captions for pictures presented to them in individual and group brainstorming situations. Results showed that creative responses increased with group interaction and that individuals had the greatest success when working independently after group brainstorming sessions. Possible reasons for this are that social interaction stimulates student interest in the topic at hand, and/or that group brainstorming gives the student a better idea of the nature of the task and thus helps him to produce more and better ideas. In a related study Lindgren and Lindgren (1965b) showed that group brainstorming can increase creative thinking in students from varied cultural backgrounds.

Another process that is used to foster student creativity is dithering. Turner (1966) has examined the use of dithering devices in the college classroom as a means of stirring up controversy and diminishing student indifference. Turner has examined two dithering devices for classroom use. The first of these involves presenting the topic of determinism versus free will. The topic is introduced to students as one which is highly controversial and for which no correct answers can be proven to exist. It is suggested that since the natural human inclination is to take the position in support of the existence of free will, it might be advantageous to try to make a case in support of its nonexistence. The instructor states that he will take the position of the determinist who feels that all behavior can be accounted for with stimulus-response theory, and that none is as the result of free will. He explains that it will take him 45 minutes to state this position, during which time it is the students' responsibiltiy to note any errors in his logic. Students are asked to hold any objections that they may have for discussion in the following class meeting. In the author's experience, this process usually stimulates great student interest, as measured by contributions made in the class discussion of the presentation as well as in the number of student requests for private conferences to expand upon points that could not be dealt with at length during class time.

While this first device can serve to heighten student creativity through stimulating student interest, the second dithering device presented by Turner deals with the subject of creativity more directly. The instructor proposes that were monkeys to be allowed to sit in front of typewriters and punch away at the keys for an infinite amount of time, they would eventually turn out a good approximation of a learned manuscript. He raises the question as to whether or not there is enough structure in our language to permit properly programmed computers to engage in creative writing at a more efficient rate than the randomly working monkeys. Turner adopts a method in which the class is essentially turned into a computer by asking each student to make up a sentence of at least eight words. The sixth word in the sentence is written down and handed to the instructor to permit the assembly of a collection of such words on the blackboard. These words are used as a display of randomlessness. Then, each student who is sitting at the end of a row is asked to make up a sentence and pick one word in it as his key word. He then writes the word in the sentence following the key word on a card and hands it to the student seated next to him. This student must then form a sentence with the word that has been handed to him in it, and to take the word in his sentence that follows this word and pass it to his neighbor who repeats the process. This is continued until the last student in the row has made up a sentence. When each member in the row has contributed one word, the collected words are then written on the blackboard in the order in which they were evolved.

When compared with the random sample of words generated earlier, it becomes evident that some order has emerged. Despite the fact that it is crude, this order shows that the words chosen were definitely not random. When this process is repeated by having each member of the row contribute two words instead of one, it becomes apparent that the types of sentences generated are even less random than those that were generated in the first series. When each member contributes three or more words, order becomes even more obvious and the sentences generated begin to make greater and greater sense.

All of the preceding sets the stage for the dithering device. Upon examining the sentences which the students have made up, it becomes evident that some of them, although to a large extent ambiguous, seem to be of a profound nature. Turner suggests that the instructor point out that a truly creative writer departs from the accepted idiom and that were he not to do so, his true creative potential might be in question. Students are willing to accept the notion that a creative writer's work should indeed be so profound as to require more than one reading before an inference can be drawn; an inference which still might remain questionable. It is then pointed out that a computer might be able to generate profound sentences much as the class did in its row-by-row sentence creation. At this point the dithering device is presented to the class in the form of the following question: "Using the definition of creativity and the criteria of creativity which have been acceptable to most of us thus far, can you refute the categorical statement that the computer, operating in the manner designated, is engaged in a creative act and brings forth a truly creative product?" Turner states that this is likely to create a class discussion in which some of the group members defend the point of machine creativity and others argue against it, with true zealous student involvement in the subject matter.

Both of the dithering devices which Turner suggests using serve to create an effective climate for student discussion, and moreover create a very high level of involvement, motivation to learn further, and a general student verve so often sought after in the educationl, and perhaps especially in the higher education, milieu.

Dithering, nevertheless, has been criticized by some as a sophistic mode of teaching. Britt (1967) wrote, regarding Turner and others of his ilk, that "Rather than recognizing the fact that we discover reality and make judgements, our sophistic friends find numerous followers who joy in the creative use of their powers of sensation and opinion without regard for truth. Every spirited use becomes its own justification and the justification of the sophistic teahcer hiding his own stand in the shadows because he has doggedly refused to take a stand. To put one's students in these same shadows is not to teach and the healthy student sees this." (p.861)

Another teaching innovation that relates to creativity is the Inductive Teaching Program (ITP). Differing from the more traditional educational methods, the ITP is a specialized means of transmitting information, by offering the learner a maximum amount of freedom and a minimum amount of structure in the educational situation. As defined by Karlins and Schroder (1967), "Used in conjunction with a complex learning problem, the Inductive Teaching Program provides material to the student in a way that permits him to generate higher level plans or strategies for making decisions, based on the consideration and comparison of self-gathered units of information." (P.867) Having been compared to the memory bank of a computer, the ITP consists of sets of facts pertaining to a given problem, written on individual IBM cards. The student must get these facts through the asking of questions which relate to the information on the cards, much in the way that one needs to write a program in order to avail oneself of a computer's information.

The Inductive Teaching Program promotes student activity throughout the learning experience. First, the student must search for needed information, and he must then process and utilize this information in a decision-making process. Karlins and Schroder (1967) state that the ITP is similar to programmed instruction, in that it enables the student to proceed with his work at a rate commensurate with his own ability. However, unlike programmed instruction, the ITP forces the student to organize material in his own unique way. Summarized, the ITP can be described as being (a) flexible insofar as it is up to the student to determine what he will be taught by the type of information that he solicits; (b) flexible in its environment in providing feedback that is relevant to the learner's input; (c) demanding on the student in making him actively manipulate the information that he gathers; (d) centered around interactive connections between the learner and the environment under investigation; and (e) concerned with the storage of factual material exclusively.

While it is true that the facts are at the student's disposal, it is entirely up to him to obtain them and, perhaps more importantly, to draw inferences and conclusions from these facts. The preceding has been described as the essential aspect of the ITP and the one which differentiates it from other learning methods. This is suited to the essential concept of making the educational process a growing experience. The way in which the ITP forces total student involvement accomodates this growth.

Inductive teaching changes the teacher's role considerably. In the traditional classroom the teacher is both the disseminator of factual information as well as the interpreter of same, switching in and out of these two roles as the need to do so exists. Karlins and Schroder (1967) point out that where the ITP is employed, the instructor's role is modified to the extent that he becomes merely an imparter of facts, leaving the interpretation of same to his students. It is the professor's responsibility to assure that the pool of factual information made available to the student is extensive enough to provide the student with answers to relevant questions.

In comparing the inductive learning process with the manifestation of creativity, the following points can be made. Creativity is usually manifested in an ability to manipulate one's environment, as well as in the reordering of existent information into new conceptual frameworks. These are quite similar to the types of student behaviors required with the use of inductive learning methods. In both creativity and inductive teaching, emphasis is not placed on quantity but on quality, in that the student is judged not by the amount of information that he has retained but more so on the means in which this information is used to cope with his environment. Another relation can be demonstrated, in that students who have experience with inductive teaching methods usually show an increase in their creative performance.

With the information available relating inductive learning to creativity, Karlins and Schroder (1967) feel that it is a worthwhile educational instrument. The question for them is which inductive method should be adopted. The authors believe the ITP to be the most preferable for the following reasons:

1. The ITP combines some of the best features of other inductive or discovery models.
2. It is relatively inexpensive to use.
3. It does not require much physical space to implement.
4. It can be easily modified to fit specific requirements.
5. It can be applied to almost any academic area.
6. It can be used to describe almost any environment for application in problem-solving or decision-making exercises.
7. It can be designed by the student as a further learning exercise.

8. It can be used as a means of assessing creativity in an ongoing and complex problem-solving milieu.

As Karlins and Schroder (1967) state: "...utilizing the ITP... objective indices of creative behavior are available involving the analysis of the types of questions a person asks in solving a problem or learning a subject. Of primary concern is the means by which a person explores an initially unstructured environment: the number of information domains he employs in dealing with the task that confronts him and the relative frequency with which each information domain is used in information request. Also of concern is the way an individual utilizes a diversity of information to arrive at an answer inductively, e.g., how effectively he puts together factual information to arrive at a solution to a problem or learn a body of material." (p.876)

Another method that has been investigated as encouraging student creativity is through Situation instruction. In an experimental analysis of this type of approach, Davis and Manske (1966) sought to determine whether pretraining or instructional conditions which force students to combine familiar ideas will result in an increase in the production of original ideas. In this study, subjects were asked to imagine themselves in a given situation and to list as many uses as they could for a particular object within the situation proposed. Twelve subjects were asked to list uses for three objects, a tire, a hanger, and a screwdriver, relating one object to one of three situation - a picnic, a classroom, and a party. Each subject was permitted to spend 10 minutes on each of the three problems. Which objects were to be paired with what situation for each student was randomly assigned with all possibilities appearing in equal frequencies. A control group of 30 subjects was merely instructed to list uses for a tire, a hanger, and a screwdriver, for which they were allowed ten minutes to compose their lists for each item. Results showed that under the situational conditions the subjects produced more uses than under the non-situational or control conditions. The average level of originality for these uses, as rated by judges, was also greater than that incurred under the control conditions. Additionally, the Situational group evidenced a greater proportion of original-to-total ideas (as rated by judges) and a greater proportion of good-to-total ideas. The authors state that "It seems very likely that this increment in originality resulted from requiring S's to continuously view previously unrelated ideas or associations, this producing new combinations of ideas."

One of the above author's investigated yet another means of encouraging student creativity via the use of idea checklists with college students (Davis & Roweton, 1968). The authors state that many courses in creative thinking teach students how to use idea checklists intended to offer general or specific answers to problems. Previous investigations seemed to show that in cases where lengthy checklists of this sort are employed, the quality and number of student attempts at problem solving decreases instead of increasing as might be expected. Davis and Roweton (1968) speculated that students seem to reject using lengthy lists of this type and prefer, instead, to rely upon their own ideas. The authors felt that were an abbreviated idea checklist to be made available to students, results might run more in the expected direction.

To check on this, a list consisting of seven items was composed and presented to subjects who were students in an undergraduate educational psychology course. These students were able to produce significantly more ideas for "changing or improving" problem objects than were subjects in a control group who were instructed to suggest changes or improvements in the same problem objects without being able to avail themselves of the checklist. In addition, ideas of students in the experimental group were judged to be more creative than those of students who were in the control group.

The authors speculate that previous experiments utilizing detailed checklists were found to fail in producing a greater amount of, or more original, ideas because college students apparently resist regurgitating ideas that have been spoon-fed to them. The abbreviated checklist was, however, more challenging in this regard, while nevertheless providing some degree of guidance and as such was not met by student resistance while being effective in encouraging the production of a greater number of high-quality ideas.

Thus, it can be seen that student creativity is almost entirely dependent upon creative teaching methods. All of the means that I have described relating to increasing student creativity depend upon the adoption of a teaching methodology that encourages students to gather information in a certain way and to analyze that information in such a way that new meanings and inferences can be drawn. Without such encouragement by the college professor, the most inherently creative students will be unable to evidence their potential, and those students who evidence little creative potential will not develop beyond their limited abilities in this regard. It is up to the instructor to see that the creativity of his students is tapped to its fullest extent, to achieve true growth in areas other than those which are strictly academic.

Contributions from the Psychological Laboratory

As I have stated previously, for all of the educational dynamics that have been discussed in the body of this text there is corresponding experimental research to validate new methods and techniques as well as to aid in the formulation of additional ones. In this section, I will further discuss some of this laboratory experimentation in its relation to college and university teaching.

I shall begin by citing the now classical experiment by Zeigarnik (1927), which was promulgated by Lewinian Field theory. As part of a series of experiments investigating the psychology of action and affection, Zeigarnik studied the memory of completed and uncompleted actions. Exploring a series of 43 tasks, which included sketching, printing names, assembling puzzles, and the like, some tasks were interrupted prior to completion while others were performed until they were fully completed. Upon being asked to recall several series of completed and incompleted tasks, Zeigarnik found that the uncompleted ones were remembered 90% better than the completed tasks. She hypothesized that the interruption of a task creates an effective tone of tension, deemed a "quasi-need" on the subject's part. The persistence of this unresolved tension causes a prolonged memory of the task. The author further felt that subject attitude and eagerness toward a task enhanced the feeling of need. When children were employed as subjects, it was found that they recalled the interrupted tasks almost exclusively.

In a later related experiment investigating perceptual and cognitive activity as it relates to the resolution of need tensions (Sternlicht, 1964), the "Zeigarnik effect" was further investigated. Ninety subjects, male and female undergraduate and graduate students, were divided into three groups of 30 each, an experimental, a first control, and a second control group. Additionally, 36 subjects, derived from the same parameter population, were employed in pre-trial experimentation. Each group was presented with a series of six meaningul, problem-solving sensorimotor tasks to be completed. For each group, three tasks were interrupted while the other three were allowed to run to completion. Following this, the experimental group was presented with three activities to complete; the viewing and naming of 30 different individual picture stimuli, the viewing of a montage of these 30 fused picture stimuli, and the subsequent recall of as many of these elements as possible, plus the writing of a story about this montage. Six of the 30 pictorial elements were associatively related to the six tasks. After the writing of the cognitive story, the experimenter left the room on an accidental pretext and observed the reactions of the subjects through a one-way mirror (for a constant time interval). The first control group was administered the series of six problems, after which an interpolated time interval was allowed to pass while the students were asked to perform a routine, non-learning task consisting of the sorting and resorting of a deck of cards. At the conclusion of the interpolated time interval, the experimenter left the room and observed the subjects through the one-way mirror. This same procedure was employed with the second control group, with the difference being that no time interval was imposed between the administration of the six tasks and the observation of the subjects' reactions. After the passage of a four-week lapse (which was empirically determined), each of the subjects in the experimental and control groups was asked to recall as many of the tasks which he had worked as he was able to, and additionally to complete an oral questionnaire, during which the subjects were queried regarding different aspects of the experimental procedure.

The findings supported those of Zeigarnik (1927), in that Sternlicht found that interrupted tasks were more frequently recalled than completed ones, with intensity being affected by the individual's milieu and values. The data further indicated that this increased recall of incompleted tasks was not so great a function of interest as it was of ego-involvement.

The main hypothesis of this experiment was supported by the results obtained, in that perceptual and cognitive activity in the area of a given need--the need for completion of an interrupted task--will tend to reduce the tensions created by that need. It was also felt that this was accomplished by associative, substitutive completion; that is, in the absence of activities directly related to need satisfaction, tensions created by a given need will be reduced by functionally selective and dependent associative, substitutive perceptual and cognitive activities. It was additionally advocated that although specific needs make themselves felt through specific tensions, their effect is the production of a general state of imbalance, and that these specific tensions can be discharged only through specific activity.

I have cited the experiments by Zeigarnik (1927) and Sternlicht (1964) as examples of how the experimental method can affect educational practices, rather than for their intrinsic value. Indeed, thousands of experiments can be cited in this vein, and while no single one might appear to be earth-shattering in its effect on higher educational methodology, the body of data made available by the experimentalists serve to affect educational practices as a whole in a positive, albeit sometimes slow, manner.

Perhaps the area of experimental psychology which has been most directly linked with higher educational practices is that of learning. Behaviorists are forever quantifying the effects of variables on learning in the laboratory. This can include investigating the effectiveness of learning in groups of varying sizes, under differing physical conditions, under varying reinforcement schedules, as well as under other varied conditions. While results of experiments of this type are not easily translated into direct application with students, either because so much of this sort of experimentation is conducted on animal subjects or due to difficulties in translating laboratory data obtained from experimentation with human subjects in the laboratory into viable classroom techniques, such research can serve to stimulate more relevant investigations in the field of educational psychology. Thus, results of many of these experimental studies on learning can be a vital link in the chain of educational improvement. Indeed, the entire area of behavior modification can be said to be rooted in the experimental laboratories of Watson, Thorndike, Skinner, and others. As I have shown, these principles of behavior modification are becoming more important a part of modern educational methodology as time progresses, although possibly of greater importance in the managing of primary and secondary school students than in college and university teaching, at least at this point in time.

As has already been stated, it is likely that educators might have more to learn from experimentalists than they presently avail themselves of, but this process is inhibited by the fact that professionals are usually so wrapped up investigating areas directly within their own discipline that few are able to pay attention to findings in other professional areas, which might in the long run make their lot a little easier, save those which are most publicized.

Because such experimentation is so diverse, it would be unfeasible to attempt to include a representative sample of same in this text that would be of specific reader interest. The reader who is interested in getting an overview of experimental research relevant to the field of education can seek out any number of recent summary articles dealing with the subject. Examples of this type of summary article can be found in such reference volumes as the Annual review of psychology. As a starting point, the interested reader might consult "Models of learning" (Cotton, 1976), "Human abilities: A review of research and theory in the early 1970's" (Horn, 1976), "Thinking and concept attainment" (Newmark & Santa, 1975), and/or "Verbal learning and memory" (Postman, 1975).

Experiments from the area of educational psychology are more obviously relevant to educational methodology. Basically, such experiments either concern themselves with teachers or with students in the attempt to quantify the effects of certain variables on one or the other.

An example of a teacher-related experiment can be found in the research of Borg (1972), who analyzed the minicourse as a vehicle for changing teacher behavior. Twenty-four teachers were employed as subjects in a test of the effectiveness of a minicourse on the discussion method of teaching. When compared with pre-experimental behavioral data, it was found that immediately after the course, an average of 10 teacher behaviors were significantly affected. After a 4-month lapse, the subjects were retested, at which time it was found that an average of 9 behaviors were significantly affected. A final follow-up was performed 39 months after the course, at which time it was determined that an average of 8 teacher behaviors were significantly affected.

Some higher educational experiments are virtually indistinguishable from studies from the experimental laboratory. As an example, a study by Burt (1974), which looked at the study and test performance of college students on concurrent assignment schedules, resembles behavioral laboratory research using human subjects. The author sought to determine whether adding a DRH (differential reinforcement of high rates) component to the traditional contingencies for study behavior would increase student productivity in courses where they were encouraged to go at their own pace.

Half of the assignments in an introductory college course were paced, i.e., they were assigned on a DRH contingency with a four-day maximum interresponse time (students received points for correct answers to assignments only if the interval for completion was less than four days), while the other half of the assignments (non-paced) could be completed, and points for completion obtained, at any time during a three-week session prior to an examination. Other contingencies, not vital to this description, were introduced. Results showed that a DRH contingency can be useful in maintaining early studying behavior and in encouraging students to complete their assignments earlier than with a non-paced schedule.

Another experiment relating specifically to higher education performed by Robinson (1974) sought to gauge the effect of teaching methods, experimental procedures, grading and exam frequency on the academic performance of students at the college level. In the first phase of the experiment, grading was found to significantly influence students' academic performance, while exam frequency had a consistent and systematic, though statistically nonsignificant, effect. In the second phase of the experiment, three groups of students were examined, the first of which was exposed to daily lectures with a monthly exam, the second given daily lectures with weekly exams, while the third attended no lectures, took oral and written exams on each chapter when they felt ready to take them, were forced to master one chapter before proceeding to the next, and received immediate feedback on their test results. The results showed that students in the third group outscored both lecture sections on the final examinations and six-month retest. In regard to the preceding, the author suggests that higher education should direct itself to more contingent systems of instruction rather than heading toward more self-controlled learning situations.

Still another experiment from the area of educational psychology which exemplifies this kind of research is that performed by Patton (1974) examining the effects of inductive and deductive presentation modes and dissonant and consonant feedback on information seeking. This type of complex study is far beyond the realm of the instructor in the classroom, and it represents the kinds of areas suited to the investigations of the educational psychologist, whose job it is to collect and analyze data obtained in a systematic fashion, and then to convert obtained information into a workable classroom methodology which is comprehensible, acceptable, and rational to the instructor.

Studies such as this are directly useful in establishing new teaching techniques, as well as in weeding out those which would eventually be found to be ineffective for classroom use. Insofar as the final validation must come from use with students, the educational psychologist performs his experiments both within and outside of the classroom. Once again, a variety of both kinds of experimental research, inside and outside of the classroom, undertaken by the educational psychologist can be cited here but, insofar as it is so multifarious, it would be far beyond the scope of this text to include a number of examples herein. Moreover, inasmuch as so much of this sort of research is taking place at all times, such a presentation would soon outlive its contemporary usefulness. As was the case with experimental psychology, the reader who is interested in getting an overview of current experimental research in this field can consult any one of a number of summary articles on the subject.

One excellent contemporary example of such a summary article is that of McKeachie (1974) on instructional psychology. In this article, McKeachie examines research in many of the important educational areas. Specifically regarding the learner, McKeachie devotes sections to anxiety, aptitude, achievement orientation, socioeconomic status and early education, and attribute-treatment interaction. Under the section devoted to the teacher, McKeachie discusses dimensions of ratings of teacher effectiveness and teacher expectancy. A third section of the review is concerned with teaching methods, technology, and characteristics of the class which specifically deals with programmed learning, computer assisted teaching, the Keller plan, simulation and games, class size, team teaching, homogeneous groupings, student options, and student centered teaching. A final section is devoted to objectives, content testing, and feedback which specifically looks at current advances regarding structure of content, information processing strategies, questioning techniques, discovery versus inductive learning, communication styles, testing and grading, and the use of rewards.

Detailed summary articles, such as the one by McKeachie, can serve to remove some of the aforementioned impedences to the incorporation of experimental data into teaching methodology, by making it rather simple for the educational professional to keep up with current advances. This, in conjunction with the previously recommended teacher cognizance of the effect of subtle behaviors which affect students, can serve to help the professor incorporate certain changes in his teaching methodology which, in turn, will heighten his effectiveness. Additionally, keeping abreast of the current experimental data also can give the professor an idea of where things are going, making him more receptive to change, especially when such change is recommended by others than himself. All in all, maintaining a link with the experimentalist creates a climate that is well suited with the incorporation of the major ideas that have been put forth in this text.

The final area of experimentation yet to be specifically discussed is that which comes from the area of clinical psychology. Unlike the areas of experimental psychology and educational psychology already discussed, it is difficult to pinpoint summary articles which relate specifically to higher education. Indeed, the major premise of this entire text is based upon the fact that the clinical psychologist has a great deal more to offer the educator than that which he presently proffers. Thus, upon reviewing current research in the area of clinical psychology one finds studies which relate specifically to aspects of education but more often studies are found which need to be translated to yield salient information in regard to teachers and students.

One study exemplary of the above is that which was performed by McDonald (1975) on teaching assertion. The author claims that instilling assertive behavior in clinical patients can be valuable in facilitating adjustment. McDonald states that the exact tactics attempted are dependent upon whether the problem the individual is experiencing stems from skill deficits, inadequate stimulus discrimination, or fear of consequences.

While this study is not directly related to the field of education, it is nevertheless supportive of the assertive (or what has been deemed "student-centered") method of teaching, which requires students to assume the responsibility for gathering their own academic knowledge and organizing same in their own unique fashion.

A similar type of clinical study which relates to student-centered teaching is that which was performed by Berger (1972) relating opportunities for making choices to neurotics. Berger claims that many neurotic patients experience difficulties stemming from an inability to choose their own options over the course of their lives, and he further relates this inability to the defensiveness often incurred in clinical intervention with neurotic patients. Here again, this study is supportive of the type of growth that should be encouraged in college and university teaching, by allowing students to make their own choices wherever possible. This not only relates to intra-course teaching in which students are allowed to choose topics for research or discussion, but it is also increasingly in evidence throughout campus life, in terms of students being allowed to choose most of their courses, to opt for pass-fail grading systems over more conventional ones, as well as to choose and overtly express their own form of lifestyle.

Other clinical studies relate to educational practices more directly. Some have looked at "test anxiety", a cause for many students' failure to gain from the educational experience. One such study, by Jaffe and Carlson (1972), examines the use of modeling therapy as a means of decreasing test anxiety. Another study, along behavioral lines, by Hall and Kinkle (1972) examined the efficacy of vicarious desensitazation of test anxiety, in which four different ways of attempting this are discussed.

Still another clinical study related to educational practice was performed by Diamond and Shapiro (1975), which demonstrated that in dealing with patients in the clinical domain, personal awareness, cognitive structuring, arousal enhancement and reduction, and behavioral expression can be facilitated via the educational encounter group. This study obviously supports the notion of using such encounter groups in higher education as means of bringing out these same positive changes in students.

One can examine clinical studies on group interaction as a means of heightening teacher effectiveness. Much of working with students in a classroom situation is facilitated by an understanding of small group processes. Indeed, in many of the previous discussions incorporated into this text this point has been made, most especially in the discussions of sensitivity training and classroom discussion. For the reader who is interested in examining such research, we would recommend such summary articles on the subject, as that by Helmreich, Bakeman, and Schewitz (1973), which includes such educationally relevant information as task performance, leadership, social facilitation, and conformity.

A knowledge of group dynamics is becoming increasingly important to the development of effective teaching in the higher educational milieu. As I have shown, more educators are noting the advantage of student discussion and student-centered teaching over traditional lecture methods. This being the case, such approaches can be most successfully integrated if the teacher has an adequate knowledge of group methods. In an earlier section, I recommended that this can be facilitated were the clinician to be called upon as a consultant. While this is probably optimal, it can still be supplemented with, or, if need be, replaced by having the teacher gain his own firsthand knowledge of group principles, in which case consulting articles such as those presented above can be invaluable.

Thus, we have seen that experimentation in three distinct areas of psychology can serve to eventually affect educational practices. I have yet to bring up a fourth area of experimentation, that in which the teacher himself attempts to quantify the effects of certain teaching variables in his own classes. Rather than the formal type of research previously described, teacher experimentation might simply involve trying one method with one class and a different method with another, to see which will meet with greater success. The professor who does this is not likely to revolutionize teaching but is evidencing the kind of teacher attitude that I have previously described as being essential to the formulation of truly effective teaching principles. It is indicative of the kind of ongoing self-evaluation which keeps the instructor from stagnating, and additionally goes hand-in-hand with the kind of motivation that we are trying to impart to our pupils. In order to truly progress, one must periodically assess where one is currently at and attempt to improve upon those areas that are deemed to be in need of improvement. By "experimentally" integrating new methods into his teaching repertoire, even without any balancing of experimental and control populations, the professor is showing a desire to improve his effectiveness, and whether these methods prove to be worthwhile or not, the teacher is likely to have gained from the experience.

Thus it can be seen that the experimental method can directly and indirectly lead to advances in educational methodology in areas of teaching skills, student evaluation, and perhaps most importantly in helping to create a climate in which educators can seek to improve their skills and to share in the knowledge accumulated by others. In fact, in many ways one can look upon the body of experimental research as being yet another "consultant" resource for the professor. I have previously referred to the case of the instructor who is loath to seek outside help (such as that of the clinical psychologist), because he may feel that such action might be an acknowledgement of less-than-adequate teaching on his part. Others might refuse to avail themselves of such help, feeling that the classroom is the domain of the teacher and of no one else. Such individuals might feel more secure were they to avail themselves of the results of relevent educational research in the attempt to increase their teaching skills. Such activity also can serve to promote the establishment of effective teaching techniques by making the professor more responsible for evaluating and updating his educational program. On the other hand, too much reliance on outside consultants might be compared to the situation in which students are given too much direction by the instructor. I have shown the latter case to be less than desirable, in that it fosters overdependence on the students' part.

In this same manner, relying too much on outside individuals as consultants can lead to overdependence on the teacher's part. Looked at in another way, I have shown that the most effective learning is fostered when an individual finds his own paths to knowledge. Viewing the learning process as an ongoing one, we can think of the teacher who is constantly seeking to increase his educational effectiveness as a student, and, as such, the same principles which we have cited as increasing student learning in the classroom can be said to apply to the instructor in the aformentioned capacity of student. This supports the previously stated notion of having the clinical psychologist serve as a resource guide, in terms of directing the educator toward those materials which will help to foster more creative and effective teaching. In this regard, the type of information that can be obtained from experimental studies in various educationally related (and sometimes nonrelated) disciplines can be invaluable.

Summary

While a number of concepts have been discussed throughout this text, the major premise has been that to be most effective, higher education must result in self-revelation and understanding, and in this regard the clinical psychologist can contribute much to academic enterprises.

We began by examining those areas of the higher educational process in which the clinical psychologist presently has input. These areas were those of counseling and guidance, testing and evaluation of the general student body (often at the request of administration), and institutional research, again on a campus-wide basis. While these were deemed to be important contributions, it was stated that there were many other areas in which the clinical psychologist's expertise and orientation could serve the individual professor in creating a more effective climate for true learning and growth within his classes.

There was a need to outline the distinction between the role of the educational psycholgist and the clinician's role as educational consultant, and this distinction was drawn. Likewise, differences between various educational levels were discussed, in which it was pointed out that although the major orientation of this text was toward higher educational learning many of the techniques presented are of value across all educational levels.

The role of learning thories was discussed, including behavioral and psychotherapeutic approaches as a rationale for much of the proposed involvement of the clinical psychologist.

The first proposed area of contribution was in helping to direct the teaching methodology. Teaching methodology, to be most efficient, must be based on sound educational and psychological theory, and true educational progress will only occur if the student is actively involved with the concepts and materials being dealt with. The clinical psychologist is in a position to translate his therapeutic insights and workings into specific educational methodological techniques.

The second area of proposed contribution was in terms of translating the results of experimental research into applied classroom techniques. For all his clinical training, the educational background of the clinical psychologist is rooted in an understanding of, and an appreciation for, research and experimental methodology. In this regard, it was stated that he should be in the vanguard of those who offer their services to the educator, who should be interested in the results of such studies in the endeavor to improve his teaching effectiveness.

A third proposed area of contribution for the clinical psychologist is in evaluating the progress of students. The aims of student evaluation were discussed, and a discussion of different types of evaluation techniques was presented. The comparison was made between the type of student evaluation that the teacher must make and that which is used by the clinician in evaluating the progress of his clients. Additionally, the importance of the type of questions asked of the student in assessing progress and in eliciting evidence of student creativity was presented.

Related to the area of translating experimental results into applied techniques, the clinical psychologist also is in a position to participate in the testing and evaluation of new theoretical inferences. In this domain, the clinician can work either independently or in conjunction with the educational psychologist who is presently solely responsible for this type of activity.

A final area of directly applying knowledge of individual, subcultural differences, was dealt with. The clinical psychologist is interested in promoting a maximum of harmonious interaction between peoples and in the consequent reduction of any erroneous knowledge of other groups, such as the amelioration of prejudicial attitudes. It was stated that a large majority of our undergraduate and graduate students are infused with so-called "middle-class" values and beliefs which was shown to impede student growth and educational progress. The clinical psychologist is thus in a position to suggest ways in which these prejudicial barriers can be broken down, including the organization of educational field trips, inviting outside speakers from the community to talk to students, and incorporating descriptive accounts of life among the lower classes into required reading.

The role of the clinical psychologist was discussed as it relates to that of the educator. It was shown that both act in the capacity of resource guide and consultant to clients and students respectively.

The learning process and its components were discussed from the standpoint of students, in which individual differences were discussed along with the need for encouraging students to become actively involved in fact gathering and interpretation. A full discussion of the efficacy of active versus passive involvement and student-centered versus teacher-centered instruction was likewise presented.

Curriculum and methodology were examined, along with the importance of basing same on sound psychological and educational theory. A presentation was made of various classroom techniques and the use of supplementary educational materials which can be introduced to obtain desired results, such as increased student responsibility in the learning process and increased student interaction, as well as in helping the professor make the best use of the limited amount of time that he has to devote to each aspect of the educational program.

Regarding the professor, it was discussed that learning is a two-way process and that to be truly effective, the teacher should place himself in a position where he learns from his students and is sensitive to their needs and individual capabilities. It was additionally pointed out that teachers might benefit in this regard from sensitivity training or from therapeutic intervention in the case where a professor is not performing up to par because of a personal problem.

The importance of student interaction was highlighted. It was shown that clinical methods such as role playing can be incorporated into classroom methodology to increase such interaction along with the use of student-led discussion groups to further promote an interactive classroom climate.

A section was devoted to student creativity in which a number of classroom methods for fostering creativity were presented, together with supportive evidence for same in the form of experimental research. Separate discussion on student creativity and creative teaching were included which was vitally linked to effective learning and growth.

The final section of this text dealt with the importance of experimental research, which research was divided into three major phases; experiments in higher education, most of which specifically relates to the field of educational psychology, experiments from clinical psychology, including a number of studies which were not directly related to the field of higher education but which can be translated by the clinical or educational psychologist to yield viable practical teaching techniques, and studies from the experimental psychological laboratory, especially those which relate to the field of behavior modification, the results of which can also be translated into effective classroom methodology.

Throughout the body of this text it has been maintained that academic knowledge must be accompanied by student growth in the higher educational setting, as well as across all educational levels. All of the discussions that have been incorporated into the body of this text have been presented with the above in mind. As time progresses, it is likely that there will be a further shift away from teacher-centered instruction to that of student-centered teaching.

Thus, there will be a greater need for outside consultation in developing a truly effective higher educational program which will fully capitalize on student abilities, which will foster those behaviors which have been shown to maximize learning and growth, which will encourage student responsibilities and creativity, and which will facilitate student interaction. There should like-as-not be a shift in the way in which we educate teachers, which will better prepare them to integrate the principles that have been presented.

Being as complex a field as it is, there is still much to be learned in the attempt to optimize the learning experience. Viable contributions in this endeavor can come from many outside sources, with the clinical psychologist being a valuable and even an integral part of the process.

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